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# Administrator Perceptions of Technology Integration in Instruction in Urban/Suburban New Jersey Public Schools

Marie C. Cirasella
*Seton Hall University*

# ADMINISTRATOR PERCEPTIONS OF TECHNOLOGY INTEGRATION IN INSTRUCTION IN URBAN/SUBURBAN NEW JERSEY PUBLIC SCHOOLS

BY

MARIE C. CIRASELLA
198 SMULL AVE.
WEST CALDWELL, NJ
07006-7852

Dissertation Committee

Joseph M. Stetar, Ph.D., Mentor
Heather Carr, Ed.D.
John W. Collins, Jr., Ed.D.
Kathleen C. Serafino, Ph.D.

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**DISSERTATION COMMITTEE**
(please sign and date beside your name)

Mentor:
Dr. Joseph Stetar 3/17/08

Committee Member:
Dr. John Collins, Jr.

Committee Member:
Dr. Kathleen Serafino

Committee Member:
Dr. Heather Carr

External Reader:

The mentor and any other committee members who wish to review revisions will sign and date this document only when revisions have been completed. Please return this form to the Office of Graduate Studies, where it will be placed in the candidate's file and submit a copy with your final dissertation to be bound as page number two.

## Abstract

School administrators may perceive technology integration in instruction in different ways, with advantages and disadvantages attached to the variety of perspectives held on the issue. The study will aid in determining the benefits of supporting technology integration programs and providing funding for the implementation of technology integration programs, an issue of concern for school administrators in the areas of educational leadership, management and policy.

The purpose of the study was to investigate the perceptions of school administrators in urban/suburban New Jersey public schools toward technology integration in instruction. The study was designed to qualitatively analyze perceptions of the administrators toward technology integration. The subjects in the study were certificated school administrators employed in urban/suburban New Jersey public school districts identified as District Factor Groups (DFG) D-E and I-J. The researcher solicited the participation of six school administrators: three from CD-DE DFG districts and three from I DFG districts. The researcher consulted the New Jersey Principals and Supervisors Association (NJPSA) website to identify administrators in the targeted DFG categories that hold the

position of Principal, Director of Curriculum and Instruction, or Superintendent. The researcher applied a maximum variation strategy in purposeful sampling in an attempt to identify a sample population with individual participants that differed in terms of the district's geographic location and DFG status.

Face-to-face interviews were conducted and used to assess the perceptions of the school administrators toward technology integration in instruction. The study proposed 10 interview questions culled from issues reflected in the review of the literature. The 10 questions were sent to a jury of experts for review and commentary and then revised by the researcher to reflect the collective opinions of the jury of experts. The 10 questions were divided into five categories: (a) Defining Technology Integration; (b) The Role of the Teacher in Technology Integration; (c) Funding and Professional Development Issues; (d) Technology Programs to Foster Technology Integration; (e) The Role of Cutting-Edge Technology Applications in Education. The researcher validated the categories in a review of the literature by identifying the research base for each category.

"Rip Van Winkle awakens in the 21st century after a hundred-year snooze and is, of course, bewildered by what he sees. Men and women dash about, talking to small metal devices pinned to their ears. Young people sit at home on sofas, moving miniature athletes around on electronic screens. Older folk defy death and disability with metronomes in their chests and hips made of metal and plastic. Airports, hospitals, shopping malls—every place Rip goes just baffles him. But when he finally walks into a schoolroom, the old man knows exactly where he is. 'This is a school,' he declares. 'We used to have these back in 1906. Only now the blackboards are green.'" Wallis and Steptoe (2006, p. 50)

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# DEDICATION

This dissertation is dedicated to my parents…

To my father, Gaetano C. Iandiorio, time has provided valuable perspective on the perils of parenting, and your gifts of life and love inspire me still.

To my beloved mother and first teacher, Giovannina Melchiorre Iandiorio…your unconditional love and steadfast belief in my abilities are embedded in each and every line of this work. Heartbroken without you, yet stronger each day because you taught me well, your love has allowed me to travel places I could never have gone alone. May God bless you always.

In Memory of Giovannina Melchiorre Iandiorio
(1933-2004)

*Your spirit has become for me a guardian angel on high-guiding, advising, and watching over me.*

*I remember you, you are with me, and I am not afraid.*

(Dyer 1996)

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# Chapter I

## INTRODUCTION

Computer technology has more than a 50-year history in education and other types of technology have been used in the business of education for a much longer time period (Roblyer, 2006). Traditionally, computers have been used in schools as productivity tools; mediums for helping the user accomplish a specific task or repeat a rudimentary function with precision. However, today's students can be identified as an ever-growing population of digital natives, positioned to expect more from technology use in education. These students were born into a digital world and expect their world of information, music, and personal contacts to be with them at all times (Prensky, 2001).

Medicus and Wood (2000) suggest that technology has the potential to enhance good teaching and engage students more actively than traditional pen and paper methodologies. When traditional instruction embraces technology as a tool for instruction, it can be stated that technology has been integrated into instruction. Curricula which mandate technology integration as a core foundational principle may require the consideration of a paradigm shift for school administrators. Ergo, resultant administrative decisions

that drive technology integration and identify its place within the construct of education can have a profound and lasting impact on schools and students.

School administrators should consider the rapidly evolving technology landscape in issues of leadership, management, and policy related to the implementation and utilization of technology in instruction. Education is well-positioned to benefit from today's technology innovations, among them online learning, one-to-one laptop initiatives, open source programming, and the integration of blogging activities into writing instruction. Technology integration benefits may also be realized with the dismantling of traditional computer labs to bring computers directly into classrooms rather than segregating tech resources via bricks and mortar boundaries.

To answer these challenges, West Virginia and North Carolina are the first two states in the United States to incorporate the Partnership for 21st Century Skills' Framework, a set of measurements that define workplace readiness skills for the digital age, into the curriculum reform process (Henke, 2007). Thus, as administrative determinations form the foundation for the instructional environment in which student achievement can occur or be impeded; examining the perceptions of school administrators

toward technology integration in instruction is an endeavor of concern to school leaders.

## Statement of the Problem

School administrators may perceive technology integration in instruction in different ways, with advantages and disadvantages attached to the variety of perspectives held on the issue. The researcher seeks to examine, analyze, and provide an assessment of the perceptions of certificated school administrators regarding technology integration in instruction. Subsidiary questions include examining the school administrator's perception of technology integration's impact on student achievement. The critical analysis will aid in determining the benefits of supporting technology integration programs and providing funding for the implementation of technology integration programs, an issue of concern for school administrators in the areas of educational leadership, management and policy.

## Purpose of the Study

The purpose of the study is to investigate the perceptions of school administrators in urban/suburban New Jersey public schools toward technology integration in instruction. The study is qualitative in nature and intends to examine, analyze, and assess the perceptions of the administrators toward technology integration in instruction.

## Research/Guiding Questions

Interview questions were derived from a review of relevant extant literature, much of which is addressed in Chapter II of this document. The interview questions were constructed sequentially and based on the researcher's design of the study. The interview questions are:

1. What is your understanding of technology integration in classroom instruction?

2. What is your understanding of the impact of technology integration on student achievement?

3. What aspects of technology integration in instruction may be identified as powerful tools for teachers seeking to attain effective student engagement?

4. How do you believe the behavioral and attitudinal aspects of the teacher help or hinder the use of technology as a tool for instruction?

5. How do you assess the role of the technology support specialist in the education environment?

6. How do you determine funding allocations for technology integration?

7. How are schools making progress regarding staff development in technology integration for teachers?

8. Briefly describe any programs you have personally been involved in that foster the use of technology integration in instruction.

9. Can you identify any programs you have not been personally involved in, but have an interest in nonetheless, that foster the use of technology integration in instruction?

10. What place do cutting-edge technology initiatives, such as blogging, contributing to Wikis, have in the school environment?

## Significance of the Study

Policymakers at the federal, state, and local levels work to insure both excellence and equity in American education (Grissmer & Ross, 2002). In the quest to identify and implement policy interventions likely to positively impact student achievement, particularly in high states testing scenarios, it is critical to examine the role of technology integration in instruction. Following an examination of the role of technology and the concept of technology integration in instruction, the resultant implications for schools emerges as a critical construct for consideration in the landscape of public education. "If we want to move the useful adoption of technology forward, it is crucial for educators to learn to listen, to observe, to

ask, and to try all the new methods their students have already figured out, and do so regularly" (Prensky, 2006, p.55). School leaders should strive to strike a balance between instructional methods that are at once high-tech and high-touch. Teachers should be encouraged to maximize opportunities afforded by technology integration while maintaining the personal contact with students that can contribute greatly toward a positive impact on student achievement (Reeves, 2006).

## Limitations of the Study

Interviews will be conducted with certificated school administrators currently employed in urban/suburban public school districts in New Jersey. The results of the study may not be generalized to districts outside of New Jersey that cannot be classified as urban/suburban, or other private, public, or charter school districts. The study was further limited by the qualitative disposition of the research design. The data was gathered through interviews and focus groups of certificated school administrators currently employed in urban/suburban New Jersey public school districts. The researcher assumed that participating school administrators provided truthful responses based on held professional perspectives. The population of the study was small. Six school administrators were used in this

study. A larger cadre of school administrators may have produced different results.

## Delimitations of the Study

The results of the study are limited to a small number of certificated school administrators currently employed in urban/suburban public school districts in New Jersey. The research study is restricted to their perceptions of technology integration in instruction.

## Definitions

*Edugames*: technology programs and resources created especially for classrooms and student learning (Vogel, 2007).

*Coupon-education*: budgetary determinations in education that are driven by a value-based perspective; that is the more bang-for-the-buck theory.

*Digital Immigrant*: Most adults are immigrants to the digital world who work hard to learn, understand, and use the new technologies (Prensky, 2001).

*Digital Native*: Students, particularly younger students, are digital natives. From birth, and for some even before birth, these students have lived in a digital world (Prensky, 2001).

*ICT Literacy*: The ability to use technology to develop 21st century content knowledge and skills, in support of 21st

century teaching and learning (Partnership for 21St Century Skills (n.d.).

*Instructional Technology*:

a. Concerned with improving the effectiveness and efficiency of learning in educational contexts, regardless of the nature or substance of that learning—solutions to instructional problems might entail social as well as machine technologies (Cassidy, 1982, as cited in Earle, 2002).

b. The systemic and systematic application of strategies and techniques derived from behavioral and physical sciences concepts and other knowledge to the solution of instructional problems (Gentry, 1995, as cited in Earle, 2002).

c. The media born of the communications revolution which can be used for instructional purposes along side the teacher, textbook, and blackboard… [as well as]…a systematic way of designing, carrying out, and evaluating the total process of learning and teaching in terms of specific objectives, based on research in human learning and communications, and employing a combination of human and nonhuman resources to bring about more effective instructions (Commission on Instructional Technology, 1970, as cited in Earle, 2002).

d. The application of our scientific knowledge about human learning to the practical tasks of teaching and learning (Heinich *et al.*, 1993, as cited in Earle, 2002).

e. A complex, integrated process involving people, procedures, ideas, devices, and organizations for analyzing problems, and devising, implementing, evaluating, and managing solutions to those problems involved in all aspects of human learning.

(AECT, 1977, as cited in Earle 2002)

f. Instructional technology is the theory and practice of design, development, utilization, management, and evaluation processes and resources for learning (Seels & Richey, 1994, as cited in Earle, 2002).

*Online Learning*: Occurs when the majority (80% or more) of instruction is delivered through the Internet and accessible by a computer 24 hours a day, 7 days a week (Davidson, 2005).

*Open Source*: Software whose application's source code is publicly distributed and available for modification by users (Guhlin, 2007).

*Partnership for 21st Century Skills' Framework*: Six-prong framework to define and measure skills crucial to the workplace of today and of the future: (a) Core Subjects, (b) 21st Century Content, (c) Learning and Thinking Skills, (d)

ICT Literacy, (e) Life Skills, (f) 21st Century Assessments, created by the Partnership, an advocacy organization whose mission is to infuse 21st century skills into education (Henke, 2007).

*Technology Integration*: Integrating technology is not about technology—it is primarily about content and effective instructional practices. Technology involves the tools with which we deliver content and implement practices in better ways. Its focus must be on curriculum and learning. Integration is defined not by the amount or type of technology used, but by how and why it is used.

*Technopoly*: A state of culture; occurs in societal dynamics when information accessibility increases at a rate greater than that of the defense mechanisms required to control it (Postman, 1993).

*Tipping Point*: The point where the exception becomes the rule and a new technology becomes commonplace (Pitler, Flynn, & Gaddy, 2004).

# Chapter II

## REVIEW OF THE LITERATURE

Among the issues facing school leaders in defining a curriculum plan include identifying the learning agenda, matching district plans to state and federal guidelines, and insuring coherence across the curricula. Challenges of a prioritized curriculum include time, money, teacher consensus, teacher resistance, identification of important content to determine inclusion and exclusion, monitoring system, and a grading system based on standards.

Despite the restrictions placed on curriculum leaders as a result of these issues, enormous benefits can result from effective leadership in this area, including improved communication and collaboration among colleagues. Further, a more focused attention on essential questions can emerge, which can aid in attaining equity in instruction across grade levels within a school, and across many schools within a district.

When curriculum leaders add the concept of technology integration to the mix, curriculum planning and design grows even more complex. Cuban (2001) speaks to the frequency and type of technology use in schools and classrooms, noting that since 1991, there has been some movement among

elementary teachers from nonusers of technology in classrooms to occasional ones and only a modest shift toward occasional and serious use in high schools. In 1996, The Technology Literacy Fund under President Clinton provided $2 billion in 5-year grants related to four pillars, or goals, related to technology acquisition in schools:

1. Modern computers and learning devices will be accessible to every student.

2. Classrooms will be connected to one another and to the outside world.

3. Educational software will be an integral part of the curriculum, and as engaging as the best video game.

4. Teachers will be ready to use and teach with technology (Cuban, 2001).

Prior to the inception of The Technology Literacy Fund, there occurred major reform in the ability to wire schools for computer labs. In 1981, there were, on average, 125 students per computer in U.S. schools; by 1991, the ratio was 18 to one; by 2000, the ratio had dropped from five to one (Cuban, 2001).

Essential questions can be raised regarding the positive effects of technology integration on student achievement in writing. Computer use in composition classes can reduce writing apprehension by offering students ease in editing

and revision, often an arduous process for the struggling writer. Most word processing programs are designed to enrich and facilitate the writing experience, from prewriting through editing for publication. Language enhancers spell checkers, Thesaurus, and other language functions, and text manipulation tools are standard features of word processing programs. When teachers utilize these capabilities in conjunction with classroom instruction, technology is transformed from the vehicle by which writing is produced, to the tools by which writing is enhanced and improved.

Additional research narrows the focus on technology integration to the use of laptops in instruction and its impact on student achievement, "Laptop use not only reinforces the utilization of successful learning strategies but also enables students to transfer the knowledge across disciplines" (Rockman et al., in Gulek & Demirtas, 2005, p. 8). A study conducted on the effectiveness of one-to-one technology-student connections afforded by the use of laptops in instruction focused on Maine's Learning Technology Initiative (MLTI). Results of the study found evidence that, "MLTI, as a total program, may be effective in raising test scores and is worthy of further study" (Muir, Knezek, & Christensen 2004).

Technology integration is often linked to writing programs. The ability to communicate effectively using the written word is a critical skill for students, and increases in importance as students move from the elementary to middle and high school grades. Writing on computers can help students hone word processing skills necessary to utilize technology through all stages of the writing process. "Writing on a word processor is often an exciting and stimulating experience to students. During the process of writing on computers, student writers can make instantaneous changes whenever and wherever they like" (Lam & Pennington, 2004). Technology implementation has given writing teachers and their students a powerful writing tool and indispensable ally (Monroe, 1997). Teaching writing via word processing software can enable students to efficiently discover and master the minutiae of the writing process, from prewriting through publishing, in a manner that is ultimately more rewarding than pen and paper techniques.

In examining student achievement in writing when technology is effectively integrated into the curriculum, research indicates that students who use computers when learning to write are more engaged and motivated in their writing. Further, they produce work that is greater in length and determined to be of a higher quality when

assessed (Goldberg et al. as cited in Gulek & Demirtas, 2005). According to Sergiovanni, September 17, 2005 at Seton Hall University, student motivation and engagement in instruction is vital, "Any curriculum that does not take into consideration the student engagement problem is doomed to fail." Thus, the concept of student motivation through technology integration is worthy of examination.

Given that the literature on technology integration legitimizes research in this area, an examination, analysis, and interpretation of the research can serve to aid districts seeking to identify the impact of technology integration as a critical component of instruction. Further, such integrative scholarship can also aid in forging the curriculum designs which frame effective instruction.

The question of the value of technology integration reaches into the budgetary milieu. As the national standards movement has taken hold, higher expectations for all students have become the new reality for schools. Linda Darling-Hammond (1997) argues that learning to higher standards is the right of all children, and the future of public schools is dependent on the success or failure of insuring this right for all students. Thus, the question

emerges: Where will the funding come that is necessary to enable this pursuit?

In consideration of the federal high stakes testing mandates and funding allocations and fiscal support necessary to provide for them, those involved in school district school budget preparation cannot ignore the achievement question. "As has been demonstrated before, parents and other taxpayers will not oblige schools strapped for money without credible evidence of student growth in achievement" (Middleton as cited in Sergiovanni, 2001, p. 128). School districts, historically quick to allocate funds for technology tools in schools, will need to credibly link technology expenditures to student achievement in order to make the case for continuing curricular advances in this arena to school boards and the taxpaying communities they serve.

The dilemma of budgetary restraints can often lead school administrators to focus on finding the best value in curriculum tools, that is the more bang-for-the-buck theory, or coupon-motivated education. This focus can be identified as a barrier to technology integration. Outfitting elementary school classrooms with technology equipment circa 1980 was a costly endeavor into murky waters. Most school districts turned to the computer lab as the solution in an

effort to have students spend time on computers (Foti, 2007). However, districts that purchased software and did not network the applications did not facilitate consistency in instructional practices during computer lab periods. Thus, lab sessions were problematic, teachers became disenchanted, and the result was to avoid the computer lab for the majority of the instructional day, "The net effect was that computer sessions became disconnected from the curriculum" (Foti, 2007, p. 715).

The question, "Has technology failed in the education arena?," provided an impetus for research in the area of accountability, that is, is the technology itself at fault, or is blame more rightly placed on the crafters of technology integration initiatives? Scrogan (1995) suggests that the lack of technology equipment and related resources in the classroom has resulted in technology integration having a minimal effect on effective instruction. Without computers in the classroom, opportunities for teachers to experiment with integration methods are eliminated. However, creative teachers with access to computers in their own classroom have harnessed the power of technology as a teaching tool, "It's how you use the tool. If we are only using it to word-process then we may as well have typewriters" (Piro as cited in Cuban, 2001, p. 69).

Fiscal constraints also contribute to the dilemma. The cost to purchase technology equipment and resources, coupled with professional development initiatives to support new and existing programs, can be cost prohibitive for districts facing multiple school budgetary crises. Scrogan (1995) advises school leaders to evaluate the value of the software in reference to curricular needs and learning impact before dismissing software costs as exorbitant and prohibitive. Estimated annual per-pupil expenditures for technology-related costs in 1995 were $75 per student. By 1999, spending had increased to $119 per student, a figure that is small in comparison to overall expenditures and far less than the cost to equip schools with minimal levels of technology equipment recommended by experts in the field (Cuban, 2001).

Research suggests recommendations to help educators extend the value of technology in schools:

1. Focus computer use on students who will benefit most. Don't dilute the value of computers by insisting that all students have equal access.
2. Use computers to support the alignment of standards, instruction, and assessment.

3. Use computers for assessment. Their ability to correct tests automatically and provide results quickly can be very beneficial.
4. Teach students to use productivity tools and the Internet, but wait until students are ready. Coordinate such teaching within and across grade levels (Pflaum, as cited in Collins, 2004-05, p. 59).

The promise embedded in hopes for the Internet finding its rightful place in the arena of schooling may hinge on the determinations of policymakers and school leaders. As technology initiatives reach the "tipping point"--the point where the exception becomes the rule and a new technology becomes commonplace--administrative decisions designed to impact teaching and learning in positive ways should reflect this dynamic. Three manageable methods for integrating information technology into curriculums center are: (a) granting students direct access to facts, ideas, and primary sources; (b) linking images and concepts to sound and film; and (c) motivating students, especially those who would not otherwise be engaged in learning (Cuban, 2001). However, an emotional construct that may be impeding technology resources in education from attaining the tipping point status could be administrative fear. Bellantoni's (2006) recent article in The Washington Times cited evidence that

school leaders are experiencing a level of apprehension about online risks. Further, governmental response to such activity is increasing, and the impending Virginia State Legislators bill regarding Web safety instruction is one indicator of legislative intervention to the issue.

Thus, the paradigm that emerges as a result of evolving technologies is one that is continually evolving, indicating that technology is, and will likely remain, a catalyst for change in the learning environment. But, it is the lens with which school administrators, leaders, and policymakers view such evolutionary change that may determine how the technology landscape in education is ultimately viewed.

# Chapter III

## METHODOLOGY AND PROCEDURES FOR DATA COLLECTION AND ANALYSIS

### Introduction

The design and methodology of the study and procedures for data collection and analysis is presented in this chapter. The chapter also contains the instrumentation used in the study and the subjects involved in the data collection.

### Research Design

The purpose of the study is to investigate the perceptions of school administrators in urban/suburban New Jersey public schools toward technology integration in instruction. The study is designed to qualitatively analyze and assess the perceptions of the administrators toward technology integration in instruction. The qualitative approach allows the researcher to employ research techniques through prescribed data collection and analysis. Qualitative methods allow the researcher to gather information and generate findings that are useful (Patton, 2002).

### Subjects

The subjects in this study will be certificated school administrators currently employed in urban/suburban New Jersey public school districts identified as District Factor

Groups (DFG) D-E and I-J. As defined by the state's Department of Education (2000), District Factor Groups (DFGs) were first developed in 1975, "…for the purpose of comparing students' performance on statewide assessments across demographically similar school districts."

Each decade, the categories recognized in DFG classifications are updated in concert with the Census Bureau's publication of the most recently gathered Decennial Census data (Appendix A).

The researcher solicited the participation of six school administrators for the study: three from CD-DE DFG districts and three from I DFG districts. The researcher consulted the New Jersey Principals and Supervisors Association (NJPSA) website to identify school administrators in the targeted DFG categories that hold the position of Principal, Director of Curriculum and Instruction, or Superintendent.

The researcher selected administrators from CD-DE and I public school districts in Essex and Union counties in an effort to include perspectives of administrators at differing ends of the DFG spectrum and on the basis of geographic location. The researcher applied a maximum variation strategy in purposeful sampling in an attempt to identify a sample population with individual participants that differed in terms of the district's geographic location

and DFG status (Patton, 2002). Using an alphabetized list of each DFG grouping in both counties, the researcher contacted administrators in each district until six administrators were identified for the sample population. The researcher is currently employed as a certificated school administrator in an urban/suburban New Jersey public school district with a DE DFG.

## Instrumentation

The researcher held to Patton's (2002) premise that qualitative interviewing begins with the assumption that the perspective of others is meaningful, knowable, and able to be made explicit. The interviews were conducted and used to assess the perceptions of the school administrators toward technology integration in instruction, and were face-to-face in structure.

The study proposes 10 interview questions culled from issues reflected in the review of the literature. The 10 questions were sent to a jury of experts for review and commentary and then revised by the researcher to reflect the collective opinions of the jury of experts. The 10 questions are divided into five categories; these categories are as follows: (a) Defining Technology Integration: questions 1, 2, (b) The Role of the Teacher in Technology Integration: questions 3, 4, 5; (c) Funding and Professional

Development Issues: questions 6, 7; (d) Technology Programs to Foster Technology Integration: questions 8, 9; and (e) The Role of Cutting-Edge Technology Applications in Education: question 10. The researcher validated the categories in a review of the literature by identifying the research base for each category:

*Category 1: Defining Technology Integration*

(1) Cuban (2001): When teachers adopt technological innovations, these changes typically maintain rather than alter existing classroom practices.

(2) Foti (2007): Static productivity tools, such as word processing software and Web editors are representational, allowing the teacher to show the student something or tell the student something.

(3) Virginia Department of Education (2005): True technology integration results when the use of the technology becomes almost transparent, "Good teaching is the result of incorporating a variety of strategies and teaching tools with the knowledge of how students learn best. Technology is one of those tools. As the use of technology becomes more integrated into instruction, its potential for enhancing teaching and learning is being validated."

*Category 2: The Role of the Teacher in Technology Integration*

(1) Lessig (2004): Teaching reading and writing in a media-laden world challenges teachers to identify technology as the tool that may enable the writer to lead or mislead, "A growing field of academics and activists see media literacy as crucial to the next generation of culture" (p. 36).

(2) Piro (as cited in Cuban, 2001): Creative teachers with access to computers in their own classroom have harnessed the power of technology as a teaching tool, "It's how you use the tool. If we are only using it to word-process then we may as well have typewriters" (p. 59).

(3) Rigeman and McIntire (2005): National and state studies of teacher's technology use in Iowa and Mississippi schools revealed that there was a large, teacher-identified need and interest in using technology more effectively in the classroom.

*Category 3: Funding and Professional Development Issues*

(1) Cattagni and Farris (2001): Internet access in US public schools has increased from 35% access to the internet for the country's public schools in 1994 to 98% connected in 2000. National Center for Education Statistics reports that there were virtually no differences in school access to the Internet by school characteristics, such as poverty level and metropolitan status.

> "The increase in Internet access over the years may have been aided by the allocation of funds through the Education rate (E-rate) program. The E-rate program was established in 1996 to make services, Internet access, and internal connections available to schools and libraries at discounted rates based upon the income level of the students in their community and whether their location is rural or urban. As of February 28, 2001, $5.8 billion has been committed to E-rate applicants throughout the nation" (p. 2).

(2) Cuban (2001): McKinsey and Company estimated that in 1995 approximately $3.3 billion was spent on hardware, software, networking and related costs. By 1999, spending had increased to $5.5 billion.

(3) Sparks and Hirsh (2000): Staff development is essential when training teachers and leads to greater student achievement. Due to more rigorous pre-service technology training, new teachers may have more technology skills than teachers receiving pre-service training fifteen years prior.

*Category 4: Technology Programs to Foster Technology Integration*

(1) Beaudry (2004) As part of the Maine Learning Technology Initiative, seventh grade students and teachers

each received a wireless laptop computer. In the first year, approximately 17,000 students and teachers from more than 240 schools received the technology resources, reflecting concerns from business and state government leaders that information technology was destined to play a much larger role in the state's economy in future years.

(2) Castiglia (2007) The One Laptop per Child project hopes to put loc-cost portable PCs in the hands of children in developing countries. The nonprofit project was launched in 2005 by Nicholas Negroponte, then-director of the media lab at the Massachusetts Institute of Technology.

(3) Sammons, Murandu, and Strickland (2002) The College of Education at Idaho State University embarked on a utilization of grant funding geared to promotion technology integration in the classroom. The University's colleges will receive tech equipment, including SmartBoards and LCD projectors and receive in-service training on the equipment. One objective for the initiative is that faculty will be more included to create and devise original, teacher-authored digitized instructional materials, thereby increasing the frequency of technology integration in college classrooms.

(4) Szabo and Hastings (2000) The research focused on the increased use of PowerPoint, a technology tool

originally developed for commercial business enterprises, in education. The study was specifically designed to examine PowerPoint, when used as a presentation tool for education lectures, and a positive impact on student achievement. The researchers conducted mock tests following lectures delivered using solely overhead resources, using solely PowerPoint resources, and PowerPoint resources combined with lecture notes. The results of the study revealed that it was the difficulty of the content being presented that had a positive impact student achievement on the mock testing, rather than the level of technology integration used during the presentation of the content.

*Category 5: The Role of Cutting-Edge Technology Applications in Education:*

(1) Manovich (2001): "The hypertext of the World Wide Web leads the reader from one text to another, ad infinitum. Contrary to popular images of computer media as collapsing all human culture into a single giant library (which implies the existence of some ordering system), or a single giant book (which implies a narrative progression), it is perhaps more accurate to think of new media culture as an infinite flat surface where individual texts are placed in no particular order…" (p. 77).

(2) Lessig (2005): "For the Internet has unleashed an extraordinary possibility for many to participate in the process of building and cultivating a culture that reaches far beyond local boundaries. That power has changed the marketplace for making and cultivating culture generally, and that change in turn threatens established content industries" (p. 9).

(3) Bolter (1991, p.99): Morphing digitized images and sound into an electronic library that moves into and beyond a textual space is a goal of cutting edge technology advocates.

> "To structure knowledge, we need a book: in the electronic medium the computer as hypertext, not as superhuman. The defining quality of the electronic medium is the ability to interweave words, pictures, video images—any material that can be represented as bits. All such material can be formed into an electronic book; it can be treated textually or hypertextually, as a network of elements through which readers can travel" (p. 99).

## Procedures for Data Analysis

The research findings will be presented as an analysis of the responses of the six research subjects to the

interview questions, and provided in a manner designed to yield high-quality detailed descriptions and identify shared patterns that emerge beyond the boundaries of participants' disparate geographic locations and DFG status. The data analysis will identify both common and exclusive recurring themes in the responses to the set of 10 interview questions. Recurring themes and the responses most frequently offered by the subjects to the set of interview questions are illustrated using a series of matrixes.

The 10 questions are divided into five categories; these categories are as follows: (a) Defining Technology Integration: questions 1, 2; (b) The Role of the Teacher in Technology Integration: questions 3, 4, 5; (c) Funding and Professional Development Issues: questions 6, 7; (d) Technology Programs to Foster Technology Integration: questions 8, 9; and (e) The Role of Cutting-Edge Technology Applications in Education: question 10. The researcher validated the categories in a review of the literature by identifying the research base for each category.

# Chapter IV

# ANALYSIS OF THE DATA

## Introduction

The researcher sought to examine, analyze, and provide an assessment of the perceptions of certificated school administrators regarding technology integration in instruction. Subsidiary questions included examining the school administrator's perception of technology integration's impact on student achievement. The resultant critical analysis can aid in determining the benefits of supporting technology integration programs and providing funding for the implementation of technology integration programs, an issue of concern for school administrators in the areas of educational leadership, management, and policy.

The purpose of the study was to investigate the perceptions of school administrators in urban/suburban New Jersey public schools toward technology integration in instruction. The interview subjects were six certificated school administrators currently employed in urban/suburban New Jersey public school districts. The research study is restricted to the perceptions of the six interview subjects regarding technology integration in instruction.

This chapter presents the findings of the study. The six individual interviews conducted by the researcher

utilized qualitative measures to collect the perceptions, viewpoints, and feelings of each subject. The interview questions were directly culled from a review of the literature on technology integration in instruction and validated by a jury of experts.

## Organization of the Analysis

The researcher asked each of the six research subjects the same set of 10 interview questions:

1. What is your understanding of technology integration in classroom instruction?

2. What is your understanding of the impact of technology integration on student achievement?

3. What aspects of technology integration in instruction may be identified as powerful tools for teachers seeking to attain effective student engagement?

4. How do you believe the behavioral and attitudinal aspects of the teacher help or hinder the use of technology as a tool for instruction?

5. How do you assess the role of the technology support specialist in the education environment?

6. How do you determine funding allocations for technology integration?

7. How are schools making progress regarding staff development in technology integration for teachers?

8. Briefly describe any programs you have personally been involved in that foster the use of technology integration in instruction.

9. Can you identify any programs you have not been personally involved in, but have an interest in nonetheless, that foster the use of technology integration in instruction?

10. What place do cutting-edge technology initiatives, such as blogging, contributing to Wikis, have in the school environment?

## Responses to the Interview Questions

Table 1 provides information regarding current position, district demographics, and number of years in the position for each of the six interview participants.

Table 1

*Respondent Data*

| ***Respondent #*** | ***Current Position*** | ***District Information*** | ***# years in position*** | ***Total # years in education*** |
|---|---|---|---|---|
| Respondent 1 | K-12 social sciences supervisor | Total student population: 4424; seven elementary, one middle, one high school | 14 | 25+ |
| Respondent 2 | Junior High School Principal | Total student population: 875; one | 16 | 30+ |

| | | | | |
|---|---|---|---|---|
| | | junior high and one high school | | |
| Respondent 3 | Director of Special Services | Total student population: 4424; seven elementary, one middle, one high school | 3 | 20+ |
| Respondent 4 | Assistant High School Principal | Total student population: 875; one junior high and one high school population of 875. | 2 | 12 |
| Respondent 5 | Director of Guidance—High School | Total student population: 875; one junior high and one high school | 5 | 14 |
| Respondent 6 | Assistant Superintendent of Schools | Total student population: 4424; seven elementary, one middle, one high school | 2 | 35+ |

*Research Question 1*

What is your understanding of technology integration in classroom instruction?

*Respondent 1.* My personal understanding, um, if you'd like to know the process we're going through now, it was limited, very limited. Until recently, we tried to infuse a few new ideas into the school. We purchased United Streaming. It's an excellent source for films, which are set in timeframes, which we think is appropriate- ten, 15 minutes instead of using a whole period. They're aligned to our standards. Um, we've had difficulty with technology. New teachers come in and they're very eager because they might have had experience. Your district is similar to ours. We have problems with funding and the whole thing. We're kind of in the middle range where we don't get anything from one end to the other and it's just—I've had teachers from poor districts and rich districts who are familiar with, and they try to use wireless setups, but it's very challenging. We're limited by equipment that doesn't always work and its almost, um, you feel like almost sometimes discouraged. It's not the fault of our technology office. It's just the fault of everything, you know. They have great difficulties but we are

working on it. We set up ANOVA Net, we're using that for SAT. We've done very little with the SmartBoards, we have them and people use them as wipe boards and it's not their fault. Sometimes when they do get a product and no one follows up on it it's, uh, um, but, I guess we see it as a whole process. I'm trying with my department to have some workshops at least on the United Streaming. But, then again, we're limited as to which rooms have the cables. They cost $100, or whatever, each and we can only have five and we can only, so we meet all these and it seems that sometimes what we do have is supersedes by the time factor and monetary constraints. But, we are going to have next week, and again this is the initiative of two of the new teachers in the social studies department, we're going to have live web casting from Washington by the Vice President's wife and a member of the Supreme Court who's going to talk about the Constitution and we're going to film that, too. So, within our capabilities, we're trying. But then again, it's a cost factor and it's a factor of training and we found that once somebody is discouraged, that's just, that's it and it takes a long time to recuperate that. It's going to be wonderful, but I think the children at home or whatever, are accustomed

to using technology for entertainment and learning. Sometimes when I come into a school setting it's kind of a fallback.

*Respondent 2.* I think I have a pretty good understanding of technology. I've been a part of the technology committee here in the district since I came to the district in 1___. I've done professional development with it, um, I've introduced it in the administrative areas as well as in the classroom and, uh, our network administrator reports to me.

*Respondent 3.* Well, it's helpful to special education students, which is my field I work with. This district doesn't use technology much in remediation as we used it in the prior district.

*Respondent 4.* My understanding is that it's essential to be able to differentiate learning for all level learners in my class.

*Respondent 5.* Limited. I'm aware that we are working as a district to integrate various technological instruments into the classroom. Having not been a part of that process as to what they're integrating, my knowledge is limited.

*Respondent 6.* Technology, in my opinion, is something that is in addition to the teacher's presentation. It

allows the, the teacher to, uh have students working independently. It adds a larger dimension to the teaching realm. It allows them to go into areas they normally just couldn't cover during class time. It gives children who are, uh, considerable proficient the opportunity to move ahead. It offers the opportunity for remediation for children that are a little slower. A lot of the programs they have I think are very, very good. Do I think it will replace the teacher as everybody is afraid of? The answer is no. The technology is a science. Teaching is an art and you need to have two of them.

*Research Question 2*

What is your understanding of the impact of technology integration on student achievement?

*Respondent 1.* Um, the impact, I think that's a serious problem too, because I think it has to be used properly and it involves training. I think sometimes there's a misunderstanding just to use technology is not the aim, but to use it with an objective or a goal in mind, and again, it's not anyone's fault, but you might see someone not necessarily here. But, I've seen, even in workshops, someone showing how to use technology to just spew out whatever the computer produces and use that as

a final product, you know, which it's not. So, I think it has to be done properly, and I think we've had a positive impact with our new program. With our ANOVA Net with SATs because we did see scores improve with students who followed that program. We're using computers for the Global Institute to try and raise our test scores. It was an initiative of the superintendent and it seemed to be successful because our scores went up beautifully this year. And the students in math are tested weekly and this information is sent back weekly through the computer. And then again, there are problems with computers not functioning right, students not being able to see the screens. I know that M_____ was telling me she does a lot with the SmartBoards and that type of thing. But you need somebody who takes that leadership and does that and influences other people.

*Respondent 2*. Well, actually a lot of the things that we've, uh, heard about don't really give us much, uh, there hasn't been a lot of documentation saying that if, uh, you integrate tech into the classroom, this or this is going to happen. For the most part, we've just gone under the premise that it supplements the instruction and helps the teacher. So, I don't know if I can say

directly. I don't have any hard evidence that it directly affects student achievement.

*Respondent 3.* Technology improves student's progress especially special education students. Technology reinforces visual learners and assists special education students in mainstream classrooms. I don't know about anything else, though.

*Respondent 4.* I think students, you bring technology into the classroom, it seems in my experience, has been that students seem to grasp the concepts of multitude of levels and are also able to use different types of technology to take the concept and apply it. Not just out of the book, you know, scripted, you know, homework assignment…bring in streaming video and SmartBoards and different things have really helped the disadvantaged learner keep up with the regular achiever.

*Respondent 5.* I think it depends on what is being used for what purpose it's being used. I think sometimes with technology like all new, uh, like typical, we jump on the bandwagon. We use things for the sake of using them because we have the gadgets and the money to buy the stuff, whatever that being. Having seen some excellent software and computer programs, especially for students moving at their own speed, there are some

excellent uses of technology. I'm just hesitant as to, I would have to see research and I mean I've done enough reading. It can help and I think it's sometimes using just for the sake of using.

*Respondent 6.* Again, as I had alluded to before, I find that it allows us to do our job better. Uh, you can't always give the one-on-one attention you'd like to, and you know children, even though they're working groups you teach cooperative learning, but it's still, there's still something missing. It's a guiding factor that has a tendency to keep them on track and on task a little bit better than when left to their own devices. And the people that construct these things, uh, I believe are smart enough to realize that the brain will only absorb what the seat can endure. So, if the program isn't something that keeps their interest, then it's of no value. But, the ones that I've seen, the ones that we use, seem to do the job very, very nicely. I like it. It's an additional tool for the teacher in the same way we used overheads. We learned how to use videos. This just seems to be a natural progression. Plus, with some of the programs you can, the children access, accessing them from home where they can get a hold of research material easier, or do things online. Also allows the

parents to be informed, so that while the children are learning, the parents can be learning. It really opens up lot of doors.

*Research Question 3*

What aspects of technology integration in instruction may be identified as powerful tools for teachers seeking to attain effective student engagement?

*Respondent 1.* Um, I think this United Streaming, because if you're talking about, we have this young man G_____, a Fulbright scholar who brought this idea to our school. He was giving a lesson on Ecuador and if somebody's curious, you could immediately produce an image on the Galapagos Islands or whatever it is you want to see. So that has an immediate impact. So, to engage the students, basically I think we should train our students in the some of the simple things. We try to promote that even to do PowerPoint presentations when teachers do that and they do it properly it holds attention. But, I would like to see that starting in kindergarten, even if they do a frame or two in PowerPoint and have them do those presentations. I don't know why they're not. I don't know, maybe we can do them through the library. I think everybody is so overwhelmed, though.

*Respondent 2.* I think that differs so much for every area. Of course, our business classes couldn't run, um, their accounting without the software. I mean the curriculum is based on that. But, in an English class, we use technology to enhance what can be done without it, but it certainly enhances, it increases student participation. SmartBoards, the teachers use SmartBoards in the English classes all the time and in the math classes so students participate more readily. It doesn't do anything that the teachers couldn't do, but what it does, it enables the students to see it to take part in it. Um, our students that learn in different ways, it addresses many different learning styles that the teacher in the front of the room can do. So, that's where it's much more supplemental than I would say in an accounting class, where it is the curriculum. Math and English classes use the SmartBoards. They use, of course, plain old word processing and in that instance, I think it enhances the curriculum to a great degree, because students are able to write, revise, edit, a lot quicker than they did, if you remember years and years ago when we didn't have a computer. I don't know that if anyone that's that young that ever taught without a computer would realize the

difference in what it does for them, but the writing, revising, editing, and just plain old word processing, it's amazing. I mean our journalism classes run everything on, through computers. Our school newspaper is done on computers. So, we've integrated it so much that in those areas it's as much a part of the curriculum as it is a supplement.

*Respondent 3.* We utilize class wide Sound Field systems. I don't know if you know what they are. They amplify individuals and, um, amplify for the teacher. She wears a mic around her neck. We are low tech. We use Franklin Spellers that help our special education students.

*Respondent 4.* PowerPoint, I think PowerPoint has become almost a standard. SmartBoards, have become or I should say, are becoming more and more integrated with district money, you know, with budget allowances. I also think the availability of live, uh, events in the classroom, to be able to use cable access, helps to improve the students learning. Instantaneous, there's instant gratification.

*Respondent 5.* Um, well, I have seen, I do know it's used at the college level where you can throw a question out, and you can move beyond. It's almost like, you

know, a game show. You can have an A, B, C, D answer and you can actually monitor by the responses of your students who's getting it and who isn't. You won't know which individual is getting it, but you'll be able to tell where the majority of your students are going. That can be beneficial with the anonymity to it so if you're nervous about raising your hand specifically. I do know that students in the age of the TV zapper and, um, they don't particularly care for our old way of teaching, and I think it tends to keep them engaged more when there's a visual stimulation going on, just not a person standing in front of the room, whether that be a whiteboard, or whatever we're talking about, the use of computers. I think that's necessary to engage the students at this point. I think the chalkboard is passé.

*Respondent 6*. You're talking about the names of some programs. We work with Compass Learning here and uh, uh, Global Institutes. They have programs that are designed to, uh, have sort of progressive at a particular rate. It does scaffolding very, very nicely. These are the two programs that I am somewhat familiar with. In all honesty, I am not as technologically oriented as I would like to be. I gotta be honest with

you, I'm a dinosaur, you know. I participate in getting involved in the technology program and try to expand my horizons by attending a workshop and what have you. But, I really do rely on student teachers and newer teachers coming into the building. I use them as a tool to teach some of us more chronologically mature educators, and that's why I also said we have a big student teaching program as well. But again, to answer your question, the two I am familiar with are Compass Learning and the Global. It's geared to helping the children progress to a certain level, take their test, go back, review what they have learned, and then have them proceed once they have mastered the skill. So I, I do like it. But, again, it just doesn't replace the teacher. It's a tool.

*Research Question 4*

How do you believe the behavioral and attitudinal aspects of the teacher help or hinder the use of technology as a tool for instruction?

*Respondent 1.* Well, again, I suppose just whatever it is. If it's a video, if the teacher's doing it without a specific objective or without a plan, it's, uh, causes the behavior to disintegrate. If there's a purpose, if there's an order, if objectives are being

accomplished and the students are participating in it, then I would see it as successful. We're fortunate with some of the new ones we have in the district. I'm going to have them do workshops on this. But, once again, if only five rooms have capabilities to do this, and uh, then it can't be a universal thing. It could almost be a requirement that a teacher or student has to produce some sort of a product based on technology, whether it's a PowerPoint presentation. It's something that you have to immediately, before one takes, doesn't supersede the other. It's not something you can do in phases. Maybe that's part of the problem with technology.

*Respondent 2.* Well, I think as with any learning initiative or teaching methodology, it depends on the teacher's enthusiasm for. And the teachers, I guess their level of confidence, in using it. Because if the teacher is confident, comfortable, and knowledgeable using the technology, the students will be. The students, it won't make it a technology issue. It will just be using the technology to do what they need to do. It will almost be transparent technology, will be how they learn, and it won't be the center point. We had an initiative here a few years ago on curriculum

mapping, and the technology was such a nightmare that if you ask any of my teachers about curriculum mapping they, everybody says "no." They put their hands up. It wasn't curriculum mapping, but the software that we had that we were using. It was such a nightmare that it became a technology issue, which it should not have been. The technology should have been transparent and it should have just been used to do curriculum mapping in a much better, more efficient way, and it was a nightmare. And we've stayed away from it now for that reason. We need people to get over it.

*Respondent 3.* The teacher needs to be the lead person with technology. Teachers should assist kids in feeling comfortable, especially the special education student who might be unfamiliar with what's going on with the equipment. The teacher has to be the one to help the student use the technology and be comfortable.

*Respondent 4.* I think the problem is that kids are much more tech savvy than the teachers. In my 21 years in education, technology has grown by incredible leaps and bounds, where my students have been submerged in that world much more than I have. So, I find myself using them to help me understand certain aspects of

technology because they're just, it's just an everyday part of their lives.

*Respondent 5.* Well, I mean, obviously I'm talking as a, I just had a guidance counselor with 39 years in the business retire, and her limited ability to access email and do her scheduling online hurt her students, because her students did not get the courses they needed because of her inability to schedule them appropriately using technology. So, I think when we're looking at maybe older, more inflexible faculty, and that doesn't mean older as in age. I don't mean it in that derogatory sense, that we need to support our staff actively to provide that they are comfortable using it. Without a doubt, some staff shy away from technology and that prohibits their ability to use it. I also think that technology can be used inappropriately. We use emails too much in this district. People get to say things by email they would never say to your face, and it's also preventing parents from having verbal contact with parents, uh, school. They shoot out emails at them and I think that's detrimental, and I've had things said to me in emails that you would never say to me, to my face, and I think it becomes almost faceless without

responsibility behind what you're saying. So, I think technology can be very manipulative.

*Respondent 6.* The teachers have to sell it. It's really simple. If they're not on board, it's not going to work. Ah, the computers, what if they go down? What if, you can make all kinds of excuses not to use it? You could also rely on it too heavily. Listen, I think, hey, key is to find the right mix. In the right mix, is going to be different for different courses, different students, different teachers. Because remember, we have a lot of variables involved here. So, as I said before, it's to be used in conjunction with the art of teaching. Also, you have to consider the amount of time that you have to use these, this technology. Is the technology available for children at home, but the teachers who are the ones responsible for utilizing it properly. The days of chalk and talk are over, okay, uh, but we still have some people that do that. So, they're not on board with cooperative learning. Now you want them to be on board with technology. So, it's something that has to be taught to the teachers, they need to be in-serviced. They need to be made to feel comfortable. Uh, I hate to admit this, but there were times when I was a younger

teacher, you'd teach toward your strengths, but you don't always teach some of the things you should have been covering. And, that's I guess, sort of a mea culpa. But, I learned and I realized in retrospect, the things I was doing and that wasn't good. So, if I don't believe in technology, I'm not going to use it effectively. If I rely on it too heavily, then you're going to be missing a certain aspect that you needed and that's the individual human touch.

*Research Question 5*

How do you assess the role of the technology support specialist in the education environment?

*Respondent 1.* Um, the specialist in technology, I, uh, this is an interesting question. First of all, we have a Supervisor of Technology and he's overwhelmed by the situation. He has I think, um, four technicians who circulate throughout the district, and they're fairly young, and I think what said about individuals taking the initiative. Because I see one of the young men doing everything, and acting immediately and some maybe are not, and it causes an imbalance, and causes a conflict. So, that's a problem with it, too. So, I think this technology, these questions, are leading to the idea how important it is and how it must be

approached carefully. And it can't be technology just for the sake of using it. That's what people have lost. You don't just give an assignment to use the computer. You, but to give an assignment, to find information, and uh, to have a goal. But, people don't realize that. Especially people who have been here a long time. To many, it's still an alien idea. I mean, some people have trouble sending an attachment. I said, "Well, send me your lesson plans. I don't know how to send lesson plans." I go like, "I'll help you," but then, I don't know, there's a resistance. There's a fear. It's a frightening thing, and that's an interesting point. No matter how advanced we are as a modern society, we have no more understanding of science really then people from the 1500's. Just because we have these things at our disposal, doesn't mean, and now that they're so complicated, we feel I think dwarfed, and that we shouldn't be able to do it and that it's beyond our capabilities. So, I guess it's just unfamiliarity with it. So, how we remedy that, I don't know.

*Respondent 2.* Well, we need, uh we need good teachers, um, and teachers tell us what they want. We ask our technology people, we have three on our team. We ask

them to assess how well our, um, backbone or our system can handle, whatever it is the teachers are requesting, or the technology team is looking into. They assess that part of it. And they pretty much do the technical end of it. They're not part of the educational aspect of it. So, I really need them to tell me if it works within our system, if we need to upgrade our system in order to make it work. So, they don't make the educational decisions. They make purely the technology decision on whether our backbone can handle it. Right now the technology teacher that was teaching Computer Science and Advanced Multimedia and those courses was just promoted to Supervisor of Mathematics. So, we really don't have anyone that familiar. We have a brand new teacher this year. She's not really familiar with the school system. She's only been here 2 weeks, so she's not real familiar. But, we've made her a part of our technology team. Um, she needs to get in and start to learn what we have, what we need, and the direction she can take the computer science class. The computer science students are the students that we also use to do our webpage. They work with our tech team, um, and after school they do work for our tech team. We have a web

club and it operates pretty much like our school newspaper, except it's on the Web and they work with teachers to, um, those students, um that part of the club, will work with our network people. They'll sit down with a teacher and if a teacher wants her own webpage they'll design it. They'll do it. They'll maintain it and teach the teacher how to use it. Some teachers have their own because they are tech savvy and just do their own and we link it. We have other teachers that work with the students from the web club and they kinda maintain it for them and help them with it and do that. So they do our district webpage as well as work with the teachers on theirs.

*Respondent 3.* I personally do not have that involvement. That is more with teachers at the buildings.

*Respondent 4.* I think it's important the tech support person or department in the high school has to stay a step ahead, has to be out there learning the technology that's on the cutting edge and bringing it back, so that we can stay not two steps behind in education, but maybe one step behind because technology changes so quickly. I think there are budgetary concerns there because that's the world our students will live in.

*Respondent 5.* How do I assess them? When I ask for help they're able to: A—respond in a timely manner and B—provide the information that I need. And seeing that I'm responsible for the entire operation, we use SASE which is our scheduling system which dovetails and I'm the person who gets blamed, and it's tied in with attendance and discipline records and I, um, very much need an IT person that knows what they're doing. And at the moment, they're not able to answer my questions and I've had to take on more of a technology role than an administrator should be doing. That's not what my role is, but it's got to be because I'm being held hostage by my technology. That's not fair to my IT person has just got the job and he got the job without the training necessary to be effective and I think he's also got far too much to do for one.

*Respondent 6.* They're the guru. They're the ones who should be really on the cutting edge bringing in on trial basis new things for the teachers to use or doing workshops for them. Uh, it's very difficult to send teachers to all of these workshops. I would rather the teacher stay in-house. Have your computer guru go to these different workshops and learn about what's going on and adapt it to the needs and limitations, if you

will, of that building. There's lots of great stuff out there, but then you come back and you have eight computers. Now, what, how do you work it? So, everything has to be customized for the building and for its needs, but this computer person, and I call them computer guru, I think that's very, very essential. And it's not just in the classroom, too, because a lot of the technology can be used for a lot of other areas. It also helps to eliminate certain drudgery types of tasks teachers have or that administrators have. So besides the classroom, this technology person benefits administration.

*Research Question 6*

How do you determine funding allocations for technology integration?

*Respondent 1.* We make an initiative within the department, as we've done with United Streaming and ANOVA Net, and that goes then through a certain process. I think maybe when you spoke about a technology department instead of just repairing. I guess that would be one of the main duties to initiate, not just to repair. But, again, it's a problem when someone has to do that immediate. I mean, I've seen our person, I've seen him in our office with a screw,

tying wires together. It almost reminded me of like a post nuclear war thing, you're trying to repair some kind of technology. He's sitting there tying some wires together to get it going again.

*Respondent 2.* Well, I'm gonna have to tell you that that's something's that's, that's changed. We have a new BA this year, so I know it's going to be a different way, it's going to be building a budget, and um, in the past we did it like any other department would. We came up with what we needed with input from the teachers for programs they wanted for the following year. Then we took the, we actually used our technology plan. We took the programs that we wanted to input, we took the um, all of the needs that the technology people themselves knew that we needed in order to, if we needed more servers, that kind of stuff, that came from them. The teachers told us what programs they wanted. Through our technology committee we made a budget and we normally followed through with that budget. But, the funny part about technology, more than any other department, is every time we set a budget for what we wanted, prices always went down. So, we were always able to do more than we ever planned on doing. Technology, that's the one area that if you

wait long enough you know you can afford more money. So, we've always been able to do more than, even more than what we planned on. So, our technology plan has always been obsolete by the following year. Um, but that's pretty much how we do it. We ask the teachers through the supervisors for what kind of programs they want. We sit down with the tech team. They come up with a number, they do the research work, tech team does all of the pricing on all of that. They do that, they tell us how much its gonna cost, and then they add in what its gonna cost on their end if they need to put something else in, and that's how we come up with a budget. As far as how much of a budget, I can't say that I know that number because it's fluctuated so much. Sometimes they found money that we were able to use, so I don't know that end of it.

*Respondent 3.* We are unique. We have 6 in-service half days in the calendar. We have the time, and staff development is determined by input from the superintendents and assistant superintendent and principals. We paired up with the state on a few different initiatives. One which is writing. We have an understanding of what we need and we have the money to do it.

*Respondent 4.* Ha, ha…I think it's almost a given now, it's almost like textbooks. It just is a part of your budget. It has to be a part of the curriculum to make it work. It has to be as much as we order reams of paper. We need to order advanced pieces of technology and stay at pace, or maybe a half a step behind, or we're doing a disservice to our students who can't compete in a global market. We use technology every day.

*Respondent 5.* Um, the way we did our budget. I'm only into my second year and we were given a 3% increase over what I had last year. The good news is I was given a very large amount of money last year, because we were integrating something called Schedule Pro, and they just gave me the same amount of money this year. So, I am going to get the training for the IT person and myself and my lead counselor, so we're not held hostage by the system. So, that's how were going to use the funding in my particular area.

*Respondent 6.* Yeah, uh, I can answer that question for you right now. You never have enough. You just don't. It's very, very expensive and there has to be an upkeep. There has to be a constant changing because the technology keeps changing. So, it's hard to say

how much do you allot. You'll never have enough. That's just my own personal opinion. If you don't have the resources, you never can really get the technology to the level that you want it. So, you know that in the field things change constantly. New programs come in. You need updated technology to work with it. And also something else to remember, too, that the children change with the technology. So, every group that's coming in is going to expect to be using the stuff that maybe they have at home, because they're probably a lot more current than the schools are. So, it's important that you have enough money. But, I'll tell you the truth. That'll never, ever happen. That's very pessimistic, but I think it's also very realistic.

*Research Question 7*

How are schools making progress regarding staff development in technology integration for teachers?

*Respondent 1.* In this particular district we've tried, and I'm not happy with the results. We have a few, a few people who've done it enthusiastically. But, 3 or 4 out of a hundred staff members, but then it's forgotten. It seems I have, like, three people and whatever's done it's these three people who, whatever is done it seems to be these people who keep it going,

whether its ANOVA Net. We have N_____ who's a social studies teacher. He gives his time and takes care of that. If someone doesn't understand something, he'll do it. He'll help them. We have J_____. We have another retired banker who came to our district, he's in his fifties. He's very savvy about technology and he's doing this wireless. He bought his own LCD because we couldn't supply one and you have to borrow it. And, you know, he went out and he did that. But, if someone asks to borrow it from this one or that one, there's actually, you can't do it. You have no lesson that day if someone else has it. This man has the means because he does it out of a passion, and so he probably spends what he's making to keep up with the technology in here.

*Respondent 2.* Well, um, in our school it changed a lot because when technology was really new and the staff here was not that comfortable with it, it was always a district wide initiative with technology, which we still have some aspects of it, especially the administrative part with our um, student personnel system, they take attendance on, like that is pretty district wide and administrative. So, we do a lot of district wide professional development in that area.

So, since technology everyone is a lot more comfortable with it, we've really progressed in that area. It's almost become a department thing because a lot of the, uh, software that the teachers use to teach has become, uh, professional development within the department because it's so specific to their department. Science. Last year, we bought a new program for dissecting. Um, I forgot the name of it. It's a great program. It takes the human body and divides it into, I forgot how many layers, and so that professional development is, um, through the department because the English teachers don't really. Now we make sure that everybody knows about what software, we have we do an inventory of all the software, and we put a list out to all the teachers telling the teachers we have the software so that if there's anybody from another department that might be able to use it, they know we have it. They know what version we have of it, and if they think we can use it, we do that. And then there's the other layer that we use that, um, like Easy Grade Pro that all teachers use for their grade book. You know, so that we pretty much maintain district wide, the rest of it has pretty much gone to

departments, um, so we really do it twofold now, its kind of moved in one level.

*Respondent 3.* We try to meet the needs of the students first. For classified students, child study teams indicate staff development needs through requests that come in to my department, um, student needs, too.

*Respondent 4.* I think schools are doing a great job. The problem is a budgetary one. But, I think when they went to the counting of professional development hours, I think a lot of schools were able to hook the technology piece into that thing and the mandated state requirement for teachers to get their 100 hours and that's where they were able to lobby for budget money to justify upgrading technology and upgrading teacher skills with technology. And then when parents kind of bucked the system, we said, "Wait a minute, we're gonna keep these teachers highly qualified, we have to keep them on the cutting edge, the states requiring it." I think the parents were much more supportive because they didn't think it was just some crazy whim.

*Respondent 5.* I think it's sporadic. I think we got the initial burst of energy when computers, Internet, research engines, and all that, um, systems came on board and now I think the young people are coming out

of college with so much information. My perception is that we're not giving as much anymore and the older ones of us are playing catch up on it. I know my daughter is in her final year as an education major and her knowledge of software and the uses that she uses in the classroom is way beyond what I know, and in fact, I learn about things from her. So, I think we're behind in catching up the average school system. They also don't teach us how to use the photocopying machine.

*Respondent 6*. Too slowly. I think it's way too slow. The key again is I said is having somebody who can teach it to the teacher. And as an educator, you know, they call it an art. One of the things you need to do is to package whatever you want to teach your children in a form that they want to pay attention to that is of interest. If you get too technical, you lose it. The same thing with teachers. What, what I think we're going to in the next 5 years or so be over the hump, because a lot of baby boomers, that I happen to be one of, we're coming out of this. A lot of people coming in have been steeped in technology from the get go. So I think we'll be picking up speed. They'll be more people on board. Let's face it, the students in college go to school. They don't order a notebook,

they order a laptop. So, I think it'll be easier. But it's, it's difficult.

*Research Question 8*

Briefly describe any programs you have personally been involved in that foster the use of technology integration in instruction.

*Respondent 1.* United Streaming and Global Institute for testing. Those three which basically are the programs. At the elementary schools we have the Compass Learning. Again, it's nice to have, but then no one uses it or it's not used properly. It's worse than not using it, this product.

*Respondent 2.* Problem-based learning was the thrust of the initiative, but integrating technology in the classroom was another part of it. So, when the teachers designed a program with the consultant for their classroom, the technology support was there for them. They taught them, the consultants taught them, how to devise a curriculum for their classrooms, as well as integrating the technology they needed to deliver that curriculum which in the last couple of years we have not had. We don't have a learning initiative like that anymore. That is gone, yeah.

*Respondent 3.* In my previous district I was involved in a reading program for reluctant readers. It was useful and we had some success with it. That's about it though.

*Respondent 4.* I personally, in my classroom, I use PowerPoint on a regular basis. We use video DVD. Kids actually make snippets of commercials and movies. I did not have access to a SmartBoard. I would have loved one. We used a lot of audio technology. I try to bring it in at least into my classroom. If I had 10 lessons in my unit, I tried to bring it in at least 6 of the 10 lessons because my classes were heterogeneously grouped. So, I had all level learners. So, I was trying to make sure I hit all the domains of learning so that the kids could grasp on whatever level they could comprehend the information.

*Respondent 5.* This year, I learned to Schedule Pro, which is using the software to do the master schedule based on student request. And we use Classics P. In fact, one of the problems we're having right now is our budget is online and our personnel record keeping is online. But, even a year later I still don't have access to my personnel records. I'm missing one of my staff and I don't know why. So, there's your

technology. There isn't a paper trail and the expectations that you're using this stuff. But, yet you don't have the access to it. The problem is also with our technology is security. Doing the master schedule, I need to develop control. The integrity of the master schedule, and I'm having problems with who has the only access and who has change access and I had to contact the person with the support background because things were changing and disappearing even though I've asked I had been told by our superintendent that I and my lead counselor are the only people that can have access to it. That's where I'm nervous about it, that limited knowledge can be dangerous because things disappear. Oh I'm sorry, I just remembered. I just added another program to our system. It's a wonderful college counseling program and eventually I want to use, eh, I want to post my program of studies online and use it for course selection, a little bit like teaching college students course selection. You sit home with your parents and drop down blocks. But, what it should be able to do is if you weren't in English 3 CP, you wouldn't get to English 4 CP, or control where you could go and remove a lot of that data part. And that paperwork and that wasted amount

of time on paper pushing in guidance. That's my next step I'm going to in guidance. Wonderful addition, parents are thrilled with it. It does scatter grams. You take your back data, PSAT, SAT, and GPA scores, you input all that data and then you do a cross reference with, um, colleges applied to. It produces scatter grams based on your school only. So, in the privacy of your home, you can go in as the student with your GPA and SAT, and you go on any system, you can, it literally will plot you based on where students from our district with. It does a cross diagram and you literally can see what your chances are. It's private and it prevents you, it removes that need from the counselor going "You don't stand a chance," because it is what it is on the visual, very good. So, that is a use of technology that I think is making a difference, especially in a high end district.

*Respondent 6*. The Compass Learning is one. We also have a consulting company. Global Institute, a lot of the testing that's been done has been on that. The thing that's good about using technology for testing is that it gives great feedback, instant feedback and teachers are relieved of doing so much clerical stuff. Things can be centralized. You can get printouts on

children's progress. That's, that's the good part. They give you data and your instruction needs to be data driven. You have to do that. I mean, and this something new to me too in the last 3 to 4 years. I'll be quite honest well, I feel, you can't go by what you feel. What do the numbers indicate? I think this is becoming more to the front based on the returns we get from NJASK and so forth. Teachers are getting used to looking at clusters, you know, shrinking down the demographic groups. It's more data driven and frankly that's what it should be. You don't wanna go to the doctor's, "I feel that you should—well, why Doc, well based on your tests, oh, okay," that's data driven. If he says, "Well, that's just a feeling I have," I have a problem with that. So, some of it is an art, some is gut, but there's a lot of room for data driven.

Research Question 9

Can you identify any programs you have not been personally involved in, but have an interest in nonetheless, that foster the use of technology integration in instruction?

*Respondent 1.* Well, we did have a program, I don't know what they spent for it. It was data-driven decision making which was horrendous, absolutely

horrendous. The administration was trained. This was not this administration. This was a few years ago and I have no idea what it was about. So, that was a waste of money. I think that was an idea of buying technology just for the sake of doing it. We had some horrible thing called Curriculum Designer which a previous Assistant Superintendent, who left a few years ago, purchased to invent and develop curricula, and it was horrible. So, I used them, but I protested the use of them. But, people don't listen, especially when the stuff has been bought. In other districts, my son talks about SmartBoards and all the children prepare PowerPoint. They have a course. Everyone has to take a course in it, which I'd like to see here. I don't know if they're required to go for a semester course. I think they're successful doing that because I, he seems to be pretty apt at doing that. They're always doing PowerPoint. Some of them, the children, produce magnificent, I was going to use one of them here for a workshop. My son and his friends did a PowerPoint presentation on autism. They produce some professional stuff. I'll tell ya, it's beautiful. Then my son, said, "You're gonna have to ask H_____. It's a copyright."

*Respondent 2.* In technology, I can't think of any offhand. I can't think of one that, you know we've moved, you know, when that learning initiative did take place with the problem based learning, it had a time and a place. I think now that our staff is much more sophisticated that we really need to go to a different direction with that. Um, at one point, it's like your students learn differently so you have to teach differently? Well, now our teachers have come in with a whole new set of. I can tell the difference. When we do our new teacher orientation, we used to spend almost the whole day on technology, trying to get the teachers acquainted with our, um, the technology here. Now, we spend a morning, because the teachers coming in, they already know how to do any kind of, um, email program, and if they know how to do First Class and we have Outlook, takes them a minute to go over it because they've been using it already. So, we're in the process of kind of moving with the way we do our professional development with the teachers because they are so much more sophisticated. They don't need the same thing that, um IDE gave us a few years ago. They need something much more sophisticated at this point.

And pretty much a lot of that is professional development that we've been sending teachers out for.

*Respondent 3.* I do not have any at this time. But, I am interested in programs connected to special education specifically.

*Respondent 4.* SmartBoard is one of them and that was a funding issue. There are some interactive programs out there in the health curriculums that are, uh, I would have loved to been able to be a part of that I may be able to bring in as an assistant principal. Maybe hooking up with one of the local hospitals, who was revamping an entire learning center based on all technology-based things to help the kids understand body systems and how they worked. I would have loved to stay or be a part of that because it was so, every piece of the body systems was interactive and some piece or another was using technology, all different kinds of things which were really kind of neat.

*Respondent 5.* Um, I don't know if you mean this by programs, but I feel I would like to learn more about Excel and spreadsheets. I think I'm still using paper and pencil too much. I'm not savvy enough on some of the basics, Microsoft works, business side of it, and I would like to get more comfortable with. And I would

also like to get more comfortable with SASE and Nation. I need more.

*Respondent 6.* No, not really. I'll be honest with you. My amount of exposure has been limited, and I'm ashamed to say it but that's the truth. And that's why I rely on these younger teachers coming in and the student teachers because I pick their brains. And they say, "You know this website," "Oh, good," I write that down. This is how I learn and of course, they say "Why don't you take a course in whatever." Time is not it to a degree, so I rely on training my staff and I have them turnkey things to me. I go to the people who show me they get results. Those are the people I tap into.

*Research Question 10*

What place do cutting-edge technology initiatives, such as blogging, contributing to Wikis, have in the school environment?

*Respondent 1.* That, of course, we haven't touched upon. As far as Wikipedia is concerned I wouldn't even want to be involved in. I'm sure it promotes its uses, as its means to promote a certain point of view, and still as far as I'm concerned, misinformation. So, we've tried. I don't know if it's cutting edge, the pen pal thing. But, then that invokes legal issues, which

discourages people, which discouraged people too, immediately. As far as cutting edge, I think we're just concerned with really getting the basics things here, and for some immediate use, I'd like to see every child be able to work with Excel, PowerPoint, things practical, that they can use.

*Respondent 2.* I mean our students are doing it. Do we approve of it? I would say that's an area that we have not gone into for instruction. But, we do a lot of it with discipline. You know, our students are really using it a lot more than our staff is. Not all of it is positive and not all of it is educational. Just like we're using IPODs now in the science classroom. I'm sure that I wouldn't be surprised if by the end of this school year we haven't used that also. The kids are using IPODs no. They use them for hard drives for portable hard drives. I do, too. You know, I take something that I'm afraid remote access isn't gonna be on. I just stick my IPOD in there and bring it home. You know, load it on my IPOD and bring it home. So we're using them in the science department for experiments and that kind of thing in their curriculum. So, um, new teachers have told me, "Yes," about using them, but I haven't observed it yet.

*Respondent 3.* I am aware of only negatives associated with blogging, and from the teacher's perspective, I think it is mostly negative.

*Respondent 4.* Um, I'm very leery of them. Wikipedia is one of them that makes me really uncomfortable. The fact that there is factual information in them and then there's some information that's skewed a tad, and it could change the entire meaning if the student doesn't research it that one step extra. I'm a big EBSCO Host person. Um, I like Academic Premier which seems to be very based in research-driven data. Try to get kids to understand. You can't just use something of one source. You need things that are backed by educational scholars on a number of different levels to justify that it's really factual, true, and representative of the information that you're researching. That's the part that makes me a little nervous about Wikipedia. You can change things to suit your own needs.

*Respondent 5.* I think I'm going to back to how I feel about anonymous posting and, um, a bit two sides answer. I was personally blogged in this town and comments were written about me and very uncomfortable with that. I think that is not an appropriate use of technology. On the other hand I sat with my daughter

this weekend. They're using Blackboard at Rowan and a professor put out an assignment. Every assignment was posted and each student was responsible for reading every student's post and responding, and the professor would be responding. It's amazing. The class was continuing in cyberspace and it was very positive and very supportive educationally, and your ruminations could be responded to. What we found when we read all the postings was that my daughter was experiencing was similar to everybody else and that was very rewarding, and the comments back and forth were supportive. So, I could see if you were sitting at home and answering a problem and you had those postings, I think that could be very positive. I guess in a larger sense, I have this anonymous kind of view of it. You're able to say and do things that you would never do, that I don't agree with. What she was dealing with really seemed to me very much a continuation of the classroom and the discussion was very positive. And it definitely is what is going on at the college level, and we're going to see the young teachers bringing it to us.

*Respondent 6*. It's a concern. It really, really is. I remember years ago when you'd say, "You always sit in front of that TV. Get away from the front of that TV."

Now, you wouldn't call it a computer screen, but I'm sorry, it's still a TV, all right, and it is. Well, we want kids to learn to use computers. Well, my kid is always in front of his computer. Well, what is he doing? Is he going online to learn about something, or is he blogging? One of the problems it's created is harassment. We have to deal with that. I have to worry about sexual predators because my kids are online. So, while the technology is good, there's that down side and I think it has had an effect. It has changed the social dynamics in a building, and in a community because before parents would say, "Oh, he was pushing my kid on the way home." Now, you can get bullied in school. You can get bullied on the way home from school. You can get bullied in your home by people getting on the Internet. So, it's a gift. But, there's a down side to it, and I don't think parents are educated enough. This generation coming up now will probably be safer. Their children will probably be safer because they're aware of what can be done. Your parents used to say, "Don't think I haven't tried that before. Do you think I'm stupid?" Because your parents were sort of in the same category. But, now these parents so a couple of steps behind their kids,

kids are technologically savvy, things happen. So I, it's creating some concerns for me. I'm more worried sometimes than comforted. Plus, it also for children not to do research properly, plagiarism, that's come into play a lot. They think doing a report is going online, downloading, stapling, and handing it in. So it's created another, another avenue of concern.

## Analysis of Overall Responses

The responses of the six administrators who participated in the study are presented in this section as transcribed verbatim by the researcher. The researcher elected to personally conduct the transcription of all interviews to become immersed in the data, an endeavor that presents opportunities for the origination of emergent insights (Patton, 2002). Recurring themes, exclusive themes, and frequently cited responses to the interview questions are illustrated by a series of tables. The organization of the data is prepared to provide a framework for pattern recognition, or the ability to see patterns in information (Boyatzis, as cited in Patton, 2002).

The construct of each table corresponds to the category of each of the 10 interview questions represented and the five categories were validated in a review of the literature: (a) Defining Technology Integration: Interview

Questions 1, 2; (b) The Role of the Teacher in Technology Integration: Interview Questions 3, 4, 5; (c) Funding and Professional Development Issues: Interview Questions 6, 7; (d) Technology Programs to Foster Technology Integration: Interview Questions 8, 9; and (e) The Role of Cutting-Edge Technology Applications in Education: Interview Question 10. Through the analysis of the overall responses, information is provided as to the extent of, and in what ways, the research findings increase and deepen understanding of administrator perceptions of technology integration in instruction.

## Analysis of Tables 2 through 21

Tables 2 and 3 indicate responses given by the administrators regarding understanding the definition of technology integration in classroom instruction. Table 2 reveals that no more than two administrators agreed on each recurring theme that emerged during the interview sessions. Two administrators professed a limited knowledge of technology; two defined technology as a remediation tool; two stated that technology is to be used to differentiate instruction; and two stated that technology may be categorized as a productivity tool. The lack of consensus reported in the data indicates the probable existence of a variety of opinions and beliefs held by school

administrators regarding that which defines technology integration.

Table 2

*Recurring Themes/Frequent Responses to Category 1, Question 1*

*Category 1:* *Defining Technology Integration*

Question 1: What is your understanding of technology integration in classroom instruction?

| *Recurring Theme/Frequent Response* | *Respondent 1* | *Respondent 2* | *Respondent 3* | *Respondent 4* | *Respondent 5* | *Respondent 6* |
|---|---|---|---|---|---|---|
| Limited understanding of technology integration | X | | | | X | |
| Tool used for remediation | | | X | | | x |
| Used to differentiate instruction | | | | X | | x |
| Static productivity tools (Foti 2007) | X | X | | | | |

Table 3 identifies two exclusive themes recorded during the interview sessions. The issue of technology replacing the teacher and a suggested fear level associated with the premise surfaced in the response provided by Respondent 6:

> Do I think it will replace the teacher as everybody is afraid of? The answer is no. The technology is a

science. Teaching is an art and you need to have two of them.

Respondent 1 linked the issue of technical support to the level of teacher comfort and motivation for technology use:

We're limited by equipment that doesn't always work and it's almost, um, you feel like almost sometimes discouraged.

Table 3

*Exclusive Theme Responses to Category 1, Question 1*

*Category 1:* *Defining Technology Integration*

Question 1: What is your understanding of technology integration in classroom instruction?

| *Respondent* | *Exclusive Themes* |
|---|---|
| Respondent 1 | Limited by equipment issues/technical support. |
| Respondent 6 | Fear that technology will "replace the teacher" is prevalent. |

Tables 4 and 5 indicate the administrators' perceptions regarding the impact of technology integration on student achievement. Table 4 indicates that all six administrators were united in agreement that technology is a productivity tool. However, creative instruction methodologies that seek to harness the power of technology and move it beyond the level of a productivity tool was included in the responses of only three administrators. Utilizing technology in

creative ways during instruction is recommended as a means to transport technology tools from the category of productivity tools to the realm of tools that enhance instructional delivery and the attainment of stated objectives, "It's how you use the tool. If we are only using it to word process, then we may as well have typewriters" (Piro, as cited in Cuban, 2001, p. 69).

Two administrators stated that technology has an immediate impact on instruction, with Respondent 1 noting:

> And the students in math are tested weekly and this information is sent back weekly through the computer.

Two identified technology as a remediation tool that is beneficial to the disadvantaged learner. Respondent 3 further amplified the commentary on remediation, stating:

> Technology improves student's progress especially special education students. Technology reinforces visual learners and assists special education student sin mainstream classrooms.

Three administrators held that technology use in instruction increases the variety of strategies and teaching tools available to the teacher. However, the response provided by Respondent 5 was couched in cautionary language:

> I think sometimes with technology like all new, uh, like typical, we jump on the bandwagon. We use things for

> the sake of using them because we have the gadgets and the money to buy the stuff, whatever that being.

This response references one recommendation designed to help educators extend technology value in schools, "Focus computer use on students who will benefit most" (Pflaum, as cited in Collins, 2004-2005, p. 59). This approach avoids the bandwagon pitfall alluded to by Respondent 5, moving the concept of technology integration down the funnel toward a more defined purpose. Information represented in Table 4 reports three exclusive themes that emerged when discussing the impact of technology on student achievement. Respondent 1 was alone in linking leadership within the framework of a response to Question 2: What is your understanding of the impact of technology integration on student achievement? Respondent 2 provided sole reference to the perception that there is a lack of hard evidence indicating technology integration's impact on student achievement. The reference to parental involvement as an unexpected and beneficial by-product of technology's impact on student achievement was provided by Respondent 6:

> …the children access, accessing them from home where they can get a hold of research material easier, or do things online. Also allows the parents to be informed,

so that while the children are learning, the parents can be learning. It really opens up lot of doors.

Table 4

*Recurring Themes/Frequent Responses to Category 1, Question 2*

*Category 1:* *Defining Technology Integration*

Question 2: What is your understanding of the impact of technology integration on student achievement?

| *Recurring Theme/Frequent Response* | *Respondent 1* | *Respondent 2* | *Respondent 3* | *Respondent 4* | *Respondent 5* | *Respondent 6* |
|---|---|---|---|---|---|---|
| Immediate impact on instruction | X | | | X | | |
| Increased variety of strategies and teaching tools (Virginia Department of Education 2005) | | X | | | X | X |
| Static productivity tools (Foti 2007) | X | X | X | X | X | X |
| Tool for remediation and disadvantaged learners | | | X | X | | |

Table 5

*Exclusive Theme Responses to Category 1, Question 2*

*Category 1:* *Defining Technology Integration*

Question 2: What is your understanding of the impact of technology integration on student achievement?

| *Respondent Number* | *Exclusive Theme* |
|---|---|
| Respondent 1 | Leadership; requires someone who uses leadership to influence others. |
| Respondent 2 | No hard evidence that technology directly affects student achievement. |
| Respondent 6 | Increases flow of parent information/parent involvement in education. |

Tables 6 and 7 indicate the perceptions of the administrators on specific aspects of technology integration which may be identified as powerful instructional tools used to increase student engagement. In Table 6, all six administrators agreed that identified software and programs, technology tools, and adaptive devices may be classified as powerful technology tools that increase the variety of a teacher's cache of instructional tools. The consensus of the administrators indicates a strong, shared belief that technology tools are powerful instructional allies for the teacher. In addition, information illustrating the creative use of technology in instruction was included in the responses of three administrators, with Respondent 4 holding

to the tenet that technology is a necessity when seeking to engage students:

> I do know that students in the age of the TV zapper and, um, they don't particularly care for our old way of teaching, and I think it tends to keep them engaged more when there's a visual stimulation going on, just not a person standing in front of the room, whether that be a whiteboard, or whatever we're talking about, the use of computers. I think that's necessary to engage the students at this point. I think the chalkboard is passé.

Three administrators cited the immediacy of the impact of technology on instruction within the context of a response to Question 3: What aspects of technology integration may be identified as powerful tools for teachers seeking to attain effective student engagement? Further, three administrators identified two specific branded technology tools, PowerPoint and SmartBoards, in their responses.

Table 6

*Recurring Themes/Frequent Responses to Category 2, Question 3*

| | |
|---|---|
| *Category 2:* | *The Role of the Teacher in Technology Integration* |
| Question 3: | What aspects of technology integration in instruction may be identified as powerful |

tools for teachers seeking to attain effective student engagement?

| *Recurring Theme/Frequent Response* | ***Respondent 1*** | ***Respondent 2*** | ***Respondent 3*** | ***Respondent 4*** | ***Respondent 5*** | ***Respondent 6*** |
|---|---|---|---|---|---|---|
| Incorporating a variety of strategies and teaching tools (Virginia Department of Education 2005) | X | X | X | X | X | X |
| Creative use of technology tools (Piro in Cuban 2001) | | X | | X | X | |
| Immediate impact on instruction | X | | | X | X | |
| Specific technology tool: PowerPoint, SmartBoards | X | X | | X | | |

Table 7 reports three exclusive themes within the context of student engagement. The perceptions of Respondent 1 indicate a belief that, with the variety of technology applications available: "…everybody is so overwhelmed, though."

Respondent 2 linked the reality of acquiring specific software requirements in order for certain courses to be taught: "Of course, our business classes couldn't run, um, their accounting without the software."

Respondent 5 responded that technology is an essential requirement for student engagement: …the chalkboard is passé.

Table 7

*Exclusive Theme Responses to Category 2, Question 3*

*Category 2:* *The Role of the Teacher in Technology Integration*

Question 3: What aspects of technology integration in instruction may be identified as powerful tools for teachers seeking to attain effective student engagement?

| *Respondent Number* | *Exclusive Theme* |
|---|---|
| Respondent 1 | Overwhelmed staff. |
| Respondent 2 | Certain curricula are based on software; without it, classes could not run. |
| Respondent 5 | Technology is necessary to engage students; the chalkboard is passé. |

Tables 8 and 9 report on responses provided by the administrators that address teacher attitudes and whether these opinions and beliefs help or hinder the use of technology as a tool for instruction. There was agreement between five administrators regarding the connection between teacher comfort level and teacher confidence in regard to technology integration in instruction. Respondent 2 stated:

> Well, I think as with any learning initiative or teaching methodology, it depends on the teacher's enthusiasm for. And the teachers, I guess their level

> of confidence, in using it. Because if the teacher is confident, comfortable, and knowledgeable using the technology, the students will be.

Respondent 6 was direct in stating: "The teachers have to sell it. It's really simple. If they're not on board, it's not going to work."

The concept of teacher buy-in with regard to technology integration is echoed in relevant extant literature. When districts do not provide adequate support for technology integration, teachers are likely to become disenchanted with the initiative and technology will become disconnected to the curriculum, rather than a force that will enhance it (Foti, 2007).

The need for districts to in-service teachers in technology was noted by three administrators, with Respondent 1 commenting on the administrator's role in the process, stating: "We're fortunate with some of the new ones (teachers) we have in the district. I'm going to have them do workshops on this."

Acknowledgement of the importance of identifying the level of teacher skill in technology use was included in the response of four administrators, and Respondent 5 provided this example by way of illustration:

> I just had a guidance counselor with 39 years in the business retire, and her limited ability to access email and do her scheduling online hurt her students, because her students did not get the courses they needed because of her inability to schedule them appropriately using technology. So, I think when we're looking at maybe older, more inflexible faculty, and that doesn't mean older as in age. I don't mean it in that derogatory sense, that we need to support our staff actively to provide that they are comfortable using it. Without a doubt, some staff shy away from technology and that prohibits their ability to use it.

As suggested by Scrogan (1995) this illustrative scenario might have been fostered by a lack of technology equipment and related resources provided to the educator. When the availability of technology is limited, opportunities for teachers to experiment with integration are eliminated, and it can be argued that teachers may not be held fully accountable for technology deficiencies.

Table 8

*Recurring Themes/Frequent Responses to Category 2, Question 4*

| *Category 2:* | *The Role of the Teacher in Technology Integration* |
|---|---|

Question 4: How do you believe the behavioral and attitudinal aspects of the teacher help or hinder the use of technology as a tool for instruction?

| *Recurring Theme/Frequent Response* | ***Respondent 1*** | ***Respondent 2*** | ***Respondent 3*** | ***Respondent 4*** | ***Respondent 5*** | ***Respondent 6*** |
|---|---|---|---|---|---|---|
| Teacher comfort and confidence with technology | | X | X | X | X | X |
| Districts need to in-service teachers in technology | X | X | | | | X |
| Level of teacher technology skill | | X | X | | X | X |

Table 9 reports two exclusive themes related to teacher attitudes. Respondent 4 indicated that students are more "…tech savvy…" than teachers, and it is the students who are used to help teachers understand technology. Respondent 5 provided information in a response that included specific references to inappropriate use of technology in the school environment:

> I also think that technology can be used inappropriately. We use emails too much in this district. People get to say things by email they would never say to your face, and it's also preventing parents from having verbal contact with parents, uh, school.

They shoot out emails at them and I think that's detrimental, and I've had things said to me in emails that you would never say to me, to my face, and I think it becomes almost faceless without responsibility behind what you're saying. So, I think technology can be very manipulative.

Table 9

*Exclusive Theme Responses to Category 2, Question 4*

*Category 2:* *The Role of the Teacher in Technology Integration*

Question 4: How do you believe the behavioral and attitudinal aspects of the teacher help or hinder the use of technology as a tool for instruction?

| *Respondent Number* | *Exclusive Theme* |
|---|---|
| Respondent 4 | Students more "tech savvy" than teachers; use students to help teachers understand technology. |
| Respondent 5 | Technology/email can be used inappropriately; technology can be manipulative. |

Tables 10 and 11 indicate responses regarding Interview Question 5: How do you assess the role of the technology support specialist in the education environment? Five administrators cite the level of technology expertise held by the individual as a barometer for assessing the role of the technology support specialist. Respondent 1 indicated

that the abundance of technology available does not automatically translate into technology integration:

> There's a fear. It's a frightening thing, and that's an interesting point. Just because we have these things at our disposal, doesn't mean, and now that they're so complicated, we feel, I think, dwarfed, and that we shouldn't be able to do it and that it's beyond our capabilities. So, I guess it's just unfamiliarity with it.

The need for the technology support specialist to stay ahead of the curve was cited by Respondent 4:

> I think it's important the tech support person or department in the high school has to stay a step ahead, has to be out there learning the technology that's on the cutting edge and bringing it back, so that we can stay not two steps behind in education, but maybe one step behind because technology changes so quickly.

Respondent 6 was in agreement with this perspective in describing the technology support specialist:

> They're the guru. They're the ones who should be really on the cutting edge bringing in on trial basis new things for the teachers to use or doing workshops for them.

Knowledge of the school or district's technology infrastructure was reported in the responses of five administrators. Respondent 2 stated that the technology support specialist is:

"…not part of the educational aspect of it. So, I really need them to tell me if it works within our system." Respondent 5 supported this common them and provided definitive parameters to be used when assessing the role of the technology support specialist: "How do I assess them? When I ask for help they're able to: A—respond in a timely manner and B—provide the information that I need." Three administrators indicated that a rapid response to technology issues was important in assessing the role of the technology support specialist, with Respondent 5 looking for the specialist to: "…respond in a timely manner…" Respondent 5 also indicated frustration when describing an experience in which the administrator's role became akin to that of the technology support specialist:

> …I, um, very much need an IT person that knows what they're doing. And at the moment, they're not able to answer my questions and I've had to take on more of a technology role than an administrator should be doing. That's not what my role is, but it's got to be because I'm being held hostage by my technology.

Table 10

*Recurring Themes/Frequent Responses to Category 2, Question 5*

*Category 2:* *The Role of the Teacher in Technology Integration*

Question 5: How do you assess the role of the technology support specialist in the education environment?

| *Recurring Theme/Frequent Response* | ***Respondent 1*** | ***Respondent 2*** | ***Respondent 3*** | ***Respondent 4*** | ***Respondent 5*** | ***Respondent 6*** |
|---|---|---|---|---|---|---|
| Level of familiarity with district technology infrastructure | X | X | | X | X | X |
| Rapid response to technology issues | | X | | X | X | |
| Level of expertise in technology | X | X | | X | X | X |

Table 11 indicates two exclusive themes that emerged in the interviews. Respondent 1 reported a perception that there is a prevalent, limited understanding of scientific advancements. Respondent 2 was the only administrator to completely identify the technology support specialist as being outside "…the educational aspect…"

Table 11

*Exclusive Theme Responses to Category 2, Question 5*

*Category 2:* *The Role of the Teacher in Technology Integration*

Question 5: How do you assess the role of the technology support specialist in the education environment?

| *Respondent Number* | *Exclusive Theme* |
|---|---|
| Respondent 1 | Limited understanding of scientific advancements, "No matter how advanced we are as a modern society, we have no more understanding of science really than people from the 1500's" |
| Respondent 2 | Technology support specialists make purely technology decisions; not part of the educational aspect of it. |

Tables 12 and 13 report the responses of the administrators to the issues of funding and professional development regarding technology integration. All six administrators agreed that a pre-determined budget process was used to determining funding allocations for technology, but only three included professional development as a component of funding in this area. A review of the data suggests administrators may choose a more bang-for-the-buck approach, or coupon-motivated education, as a reaction to the dilemma of budgetary restraints when considering technology allocations. Respondent 4 was one of the administrators who did not include remarks on professional

development as related to technology funding, confining the commentary to software and hardware acquisition:

> …I think it's almost a given now, it's almost like textbooks. It just is a part of your budget. It has to be a part of the curriculum to make it work. It has to be as much as we order reams of paper.

Respondent 6 also did not reference professional development and directly stated: "I can answer that question for you right now. You never have enough (funds)."

Four administrators stated that funding for technology integration needs to increase over time, and Respondent 3 linked expenditures to program objectives in a response that most closely referenced a link between technology expenditures and student achievement, "We have an understanding of what we need and we have the money to do it."

This response speaks to the broader issues of school funding and the buy-in factor of the community-at-large, each are critical components of the school budgetary process, "…taxpayers will not oblige schools strapped for money without credible evidence of student growth in achievement" (Middleton, as cited in Sergiovanni, 2001, p. 128).

Table 12

*Recurring Themes/Frequent Responses to Category 3, Question*

6

*Category 3:* *Funding and Professional Development Issues*

Question 6: How do you determine funding allocations for technology integration?

| *Recurring Theme/Frequent Response* | ***Respondent 1*** | ***Respondent 2*** | ***Respondent 3*** | ***Respondent 4*** | ***Respondent 5*** | ***Respondent 6*** |
|---|---|---|---|---|---|---|
| Pre-determined budget process | X | X | X | X | X | X |
| Funding essential for staff development (Sparks and Hirsh 2000) | | X | X | | X | |
| Increased funding for technology (Cuban 2001) | | X | X | | X | X |

Table 13 reflects two diametrically opposed exclusive themes unearthed during the interview process. Respondent 2 was alone in stating that technology is an area of school funding that allows districts to buy more as time goes on as technology costs in the marketplace go down throughout the course of a district's fiscal year:

> Technology, that's the one area that if you wait long enough you know you can afford more money. So, we've always been able to do more than, even more than what we planned on. So, our technology plan has always been obsolete by the following year.

However, Respondent 6 took an opposite view in stating that technology costs are not going down, but rather increasing:

> It's very, very expensive and there has to be an upkeep. There has to be a constant changing because the technology keeps changing. So, it's hard to say how much do you allot. You'll never have enough. That's just my own personal opinion. If you don't have the resources, you never can really get the technology to the level that you want it.

Table 13

*Exclusive Theme Responses to Category 3, Question 6*

*Category 3:* *Funding and Professional Development Issues*

Question 6: How do you determine funding allocations for technology integration?

| *Respondent Number* | *Exclusive Theme* |
|---|---|
| Respondent 2 | Always able to afford more than what was budgeted for as technology prices drop as time goes on. |
| Respondent 6 | Never have enough money budgeted for technology. |

Tables 14 and 15 display administrator responses to funding and professional development issues regarding technology integration. Two administrators indicated positive comments regarding progress made in this area and three administrators reported negative comments. Two administrators agreed that funding for staff development in

technology integration is essential for technology infusion programs to be successful in schools. Respondent 4 provided positive remarks about school support for staff development and identified funding implications as an issue of concern: "I think schools are doing a great job. The problem is a budgetary one."

Table 14

*Recurring Themes/Frequent Responses to Category 3, Question 7*

*Category 3:* *Funding and Professional Development Issues*

Question 7: How are schools making progress regarding staff development in technology integration for teachers?

| *Recurring Theme/Frequent Response* | *Respondent 1* | *Respondent 2* | *Respondent 3* | *Respondent 4* | *Respondent 5* | *Respondent 6* |
|---|---|---|---|---|---|---|
| Positive regarding progress made | | X | | X | | |
| Negative regarding progress made | X | | | | X | X |
| Funding essential for staff development (Sparks and Hirsh 2000) | X | | | X | | |

Table 15 shows three exclusive themes recorded during the interviews. Respondent 1 indicated that some teachers opt to use personal funds to continue progress with

technology integration and may elect to do so out of a personal zeal for the science of technology applications:

> He's very savvy about technology and he's doing this wireless. He bought his own LCD because we couldn't supply one and you have to borrow it. And, you know, he went out and he did that. But, if someone asks to borrow it from this one or that one, there's actually, you can't do it. You have no lesson that day if someone else has it. This man has the means because he does it out of a passion, and so he probably spends what he's making to keep up with the technology in here.

Respondent 5 identified the irregular pattern of educators' enthusiasm as an issue when examining progress in technology integration:

> I think it's sporadic. I think we got the initial burst of energy when computers, Internet, research engines, and all that, um, systems came on board and now I think the young people are coming out of college with so much information. My perception is that we're not giving as much anymore and the older ones of us are playing catch up on it.

For this administrator, it is reasonable to suggest that technology initiatives are not close to reaching tipping point status, the point where the exception becomes the rule

and new technologies become commonplace. Respondent 4 was alone in enthusiastically declaring: "Schools are doing a great job."

Table 15

*Exclusive Theme Responses to Category 3, Question 7*

*Category 3:* *Funding and Professional Development Issues*

Question 7: How are schools making progress regarding staff development in technology integration for teachers?

| *Respondent Number* | *Exclusive Theme* |
|---|---|
| Respondent 1 | Teachers use personal funds to keep up with technology. |
| Respondent 4 | Schools are doing a great job. |
| Respondent 5 | Progress is sporadic. |

Tables 16 and 17 show responses involving the administrators' personal involvement in technology integration programs and initiatives. Table 16 indicates that five administrators identified specific software programs in their responses, among them United Streaming, Compass Learning, PowerPoint, Schedule Pro, and Classics P. However, only Respondent 2 identified a broad-based initiative that moved beyond software acquisition and reported firsthand knowledge of such an initiative in responding: "Problem-based learning was the thrust of the

initiative, but integrating technology in the classroom was another part of it."

The response of Respondent 2 was further amplified to include evidence that the initiative received support in the district:

> …teachers designed a program with the consultant for their classroom, the technology support was there for them. They taught them, the consultants taught them, how to devise a curriculum for their classrooms, as well as integrating the technology they needed to deliver that curriculum which in the last couple of years we have not had. We don't have a learning initiative like that anymore. That is gone, yeah.

Table 16

*Recurring Themes/Frequent Responses to Category 4, Question 8*

*Category 4:* *Technology programs to Foster Technology Integration*

Question 8: Briefly describe any programs you have personally been involved in that foster the use of technology integration in instruction?

| *Recurring Theme/Frequent Response* | ***Respondent 1*** | ***Respondent 2*** | ***Respondent 3*** | ***Respondent 4*** | ***Respondent 5*** | ***Respondent 6*** |
|---|---|---|---|---|---|---|
| Identified specific software program | X | | X | X | X | X |
| Identified | | X | | | X | |

| | | | | | | |
|---|---|---|---|---|---|---|
| specific technology initiative | | | | | | |
| Positive regarding technology programs | | | X | X | | X |

Table 17 shows the three exclusive themes which emerged during the interviews. Respondent 2 was the only administrator personally involved in a tech-infused problem-based learning initiative. Respondent 5 reported a feeling of apprehension about firsthand involvement in technology integration, and included a description of a scenario in which it was necessary for the administrator to maintain control, even though the flow of information was being negatively impeded by technology issues: "That's where I'm nervous about it, that limited knowledge can be a dangerous thing because things disappear."

Respondent 6 was alone in referencing the use of data to drive instruction and reported that the individual feelings of educators should not impact decision-making:

> …your instruction needs to be data-driven. You have to do that. I mean, and this is something new to me in the last three to four years. I'll be quite honest, well, I feel, you can't go by what you feel.

Table 17

*Exclusive Theme Responses to Category 4, Question 8*

*Category 4:* *Technology programs to Foster Technology Integration*

Question 8: Briefly describe any programs you have personally been involved in that foster the use of technology integration in instruction?

| *Respondent Number* | *Exclusive Theme* |
|---|---|
| Respondent 2 | Problem-based learning/technology integration. |
| Respondent 5 | "Nervous" about new programs; limited knowledge can be dangerous things disappear when not used. |
| Respondent 6 | Concerned that teacher' feelings obscure the need to choose technology/software that utilizes data to drive instruction. |

Tables 18 and 19 show the responses of the administrators when asked to identify specific programs that foster technology integration in instruction they may not have personally been involved in, but have an interest in nonetheless. Table 18 indicates that the responses of four administrators were specific in including references to the branded software programs Curriculum Designer, PowerPoint, and First Class. Five administrators reported positive commentary in this area. Respondent 2 provided a response that identified a specific technology program, a tech-infused problem-based learning districtwide learning initiative.

Table 18

*Recurring Themes/Frequent Responses to Category 4, Question 9*

*Category 4:* *Technology programs to Foster Technology Integration*

Question 9: Can you identify any programs you have not been personally involved in, but have an interest in nonetheless, that foster the use of technology integration in instruction?

| *Recurring Theme/Frequent Response* | *Respondent 1* | *Respondent 2* | *Respondent 3* | *Respondent 4* | *Respondent 5* | *Respondent 6* |
|---|---|---|---|---|---|---|
| Identified specific software program | X | X | | X | X | |
| Identified specific technology initiative | | X | | | | |
| Positive regarding technology programs | X | | X | X | X | X |

Table 19

*Exclusive Theme Responses to Category 4, Question 9*

*Category 4:* *Technology programs to Foster Technology Integration*

Question 9: Can you identify any programs you have not been personally involved in, but have an interest in nonetheless, that foster the use of technology integration in instruction?

| *Respondent Number* | *Exclusive Theme* |
|---|---|
| Respondent 1 | Staff does not buy in when district purchases programs without input. |
| Respondent 2 | Today's staff members more sophisticated with technology; bar needs to be raised. |
| Respondent 5 | Still using paper and pencil too much; not savvy on basic Microsoft Works/Office programs. |

Tables 20 and 21 report the administrator responses to the infusion of new technologies into instruction as presented in Question 10: What place do cutting-edge technology initiatives, such as blogging, contributing to Wikis, have in the school environment? All six administrators were united in providing negative commentary regarding the integration of new technologies into instruction. The suggestion that it is the dynamic of administrative fear that prevents technology from reaching the tipping point in schools was addressed by Bellantoni (2006) who held that school leaders are experiencing a level of apprehension regarding new technologies, especially those that can be related to online risk factors. Respondent 1 stated:

> As far as Wikipedia is concerned I wouldn't even want to be involved in. I'm sure it promotes its uses, as its means to promote a certain point of view, and still as far as I'm concerned, misinformation.

Respondent 2 acknowledged that students are using cutting edge technologies outside the classroom, but did not indicate administrative approval for integrating new technologies into instruction: "I mean our students are doing it. Do we approve of it? I would say that's an area that we have not gone into for instruction."

Respondent 3 was forthright in responding: "I am aware of only negatives associated with blogging, and from the teacher's perspective, I think it is mostly negative."

Respondent 4 reported apprehension in responding:

> Um, I'm very leery of them. Wikipedia is one of them that makes me really uncomfortable. The fact that there is factual information in them and then there's some information that's skewed a tad, and it could change the entire meaning if the student doesn't research it that one step extra.

Respondent 6 was direct in communicating a response that indicated trepidation regarding the integration of new technologies in the school environment, stating:

> "It's a concern. It really, really is."

The response of Respondent 5 indicated agreement with the other administrators and included acknowledgement of being uncomfortable with blogging. But, the response of

Respondent 5 was further amplified to include a positive reference to new technologies:

> Every assignment was posted and each student was responsible for reading every student's post and responding, and the professor would be responding. It's amazing. The class was continuing in cyberspace and it was very positive and very supportive educationally, and your ruminations could be responded to.

Table 20

*Recurring Theme/Frequent Responses to Category 5, Question 10*

*Category 5:* *The Role of Cutting-Edge Technology Applications in Education*

Question 10: What place do cutting-edge technology initiatives, such as blogging, contributing to Wikis, have in the school environment?

| *Recurring Theme/Frequent Response* | ***Respondent 1*** | ***Respondent 2*** | ***Respondent 3*** | ***Respondent 4*** | ***Respondent 5*** | ***Respondent 6*** |
|---|---|---|---|---|---|---|
| Internet possibilities (Lessig 2005) | | X | | | X | X |
| Positive regarding new technologies | | X | | | X | X |
| Negative regarding new technologies | X | X | X | X | X | X |

Table 21 shows the two exclusive themes which emerged from the interviews. Respondent 1 was the only administrator to reference the legal implications that may be inherent in new technologies, such as blogging and contributing to Wikis. It is reasonable to identify these remarks as timely as governmental response to the activities of new technologies is increasing, state legislative intervention regarding Web safety mandates is also on the rise (Bellantoni, 2006). Respondent 6 was alone in referencing parents and their level of technological skill:

> But, there's a down side to it, and I don't think parents are educated enough. This generation coming up now will probably be safer. Their children will probably be safer because they're aware of what can be done. Your parents used to say, 'Don't think I haven't tried that before. Do you think I'm stupid?' Because your parents were sort of in the same category. But, now these parents so a couple of steps behind their kids, kids are technologically savvy, things happen. So I, it's creating some concerns for me. I'm more worried sometimes than comforted.

Table 21

*Exclusive Theme Responses to Category 5, Question 10*

*Category 5: The Role of Cutting-Edge Technology Applications in Education*

Question 10: What place do cutting-edge technology initiatives, such as blogging, contributing to Wikis, have in the school environment?

| *Respondent Number* | *Exclusive Theme* |
|---|---|
| Respondent 1 | Invokes legal issues which discourage people. |
| Respondent 6 | Parents not educated enough for cutting-edge technology to be effective in schools. |

## Summary of Chapter IV

Chapter IV included a presentation of the data and a summary of the research findings. The responses of the six administrators who participated in the study were presented as transcribed verbatim by the researcher. The researcher elected to personally transcribe the responses to the interview questions to become immersed in the data, an endeavor that presents opportunities for the origination of emergent insights (Patton, 2002).

The responses of the six school administrators who participated in the study were clustered into several categories: recurring themes, exclusive themes, and frequently cited responses. Responses to the interview questions were illustrated by a series of tables. The organization of the data was prepared to provide a framework for pattern recognition, the ability to see patterns in information. The construct of each table corresponded to

the category of each of the ten interview questions represented and the five categories were validated in a review of the literature: (a) Defining Technology Integration: Interview Questions 1, 2; (b) The Role of the Teacher in Technology Integration: Interview Questions 3, 4, 5; (c) Funding and Professional Development Issues: Interview Questions 6, 7; (d) Technology Programs to Foster Technology Integration: Interview Questions 8, 9; and (e) The Role of Cutting-Edge Technology Applications in Education: Interview Question 10.

# Chapter V

## SUMMARY, CONCLUSIONS AND RECCOMMENDATIONS

### Introduction

The purpose of this chapter is to summarize the research findings of this study which was designed to investigate the perceptions of school administrators in urban/suburban New Jersey public schools toward technology integration in instruction. The study was qualitative in nature and sought to examine, analyze, and assess the perceptions of the administrators toward technology integration in instruction through individual interviews.

Chapter I provides a statement of the problem to be studied: administrator perceptions of technology integration in instruction. The chapter also identifies the purpose of the study and provides research and guiding questions for the research. The study's significance to the education community is addressed, and limitations and delimitations of the study are acknowledged.

Interview questions used in the study were derived from a review of relevant literature; this literature is addressed in Chapter II. The interview questions were constructed sequentially and based on the researcher's study. Chapter III identifies the methodology used in the study through the research design. Information regarding

the subjects used in the study, its instrumentation, and the procedures for data analysis are also stated in the chapter. Chapter IV provides an analysis of the data and organization of the analysis, plus the responses to the research questions provided by all participants. Chapter V summarizes the research findings, provides conclusions, and offers recommendations in the areas of leadership, management and policy. Chapter V also provides the researcher's recommendations for further research.

## Summary of the Findings

The six administrators were in full agreement when sharing perceptions regarding the integration of technology into instruction as related to certain categories. They agreed that technology may be categorized as productivity tools in schools, and that technology tools increase the teacher's cache of instructional devices.

The issue of teacher comfort and confidence in using technology in instruction was referenced by five administrators, who concurred that the attitudes, opinions, and beliefs of the teacher are critical factors to be considered when evaluating the success of technology integration in the classroom. Knowledge of the school or district's level of familiarity with the technology infrastructure was deemed important by five administrators.

The level of expertise in technology use held by educators was also cited by five of the six administrator interviews.

Five administrators identified specific software or branded programs when describing technology initiatives they had personal involvement in during their professional experiences. Five administrators also indicated a positive response to programs they had not worked with, but held an interest in nonetheless. Responses to funding issues related to technology integration yielded commonalities in perception, but only three administrators included commentary regarding the allocation of funding for professional development in technology use for instructional staff.

Despite attaining consensus regarding the use of technology as a means to increase the variety of tools that may be used to differentiate instruction, only three administrators included specific examples of creative uses of technology in instruction in their responses. Finally, all six administrators expressed concern about the advent of new technologies and questioned the efficacy of the place of new tech tools have in the classroom. During individual interviews, the six administrators indicated a negative perception of the use of an emerging class of technologies, such as blogging and Wikipedia, in instruction. This

consensus suggests that the hope for students to become proficient navigators in a digitized world, one that has eliminated classroom walls through virtual means, may be impacted by the negative perception of new technologies held by school administrators.

## Conclusions

The purpose of the study was to investigate the perceptions of school administrators in urban/suburban New Jersey public schools toward technology integration in instruction. The study was qualitative in nature and intended to examine, analyze, and assess the perceptions of the administrators toward technology integration in instruction. The research design was constructed to unearth data that would aid in identifying common themes, patterns, and exclusive themes through individual interviews with school administrators.

Administrative opinions, beliefs, and perceptions on technology's role in education should encompass a position that seeks to identify the purpose of education in the ever-quickening economic milieu of a global society. School leaders may further expand the purpose of education within a global perspective by providing academic opportunities for students to maximize individual potential within divergent societies, thereby fostering the development of a productive

civic-minded citizenry in each that embraces globalization, "…the quickening pace of globalization over the past 20 years—driven by the profound technological changes described by Thomas Friedman in *The World is Flat;* by the economic resurgence of China, Russia, and India; and by the accelerating pace of scientific discovery—has produced a whole new world" (Stewart & Kagan, 2005, p. 241).

If it can be said that research serves as the balustrade to support policymaking in schools, it is reasonable to suggest that research is the core of policy implementation and the body of work that gives credence to change. The conundrum facing proponents of technology integration into instruction, and the infusion of new technologies into schools, has been in evidence for more than two decades. Those in education who choose to embrace this electronic advent should consider that one of the barriers preventing technology from integrating fully into the bricks-and-mortar environment of schools may be the perceptions held by school administrators.

The perceptions of school administrators regarding technology integration into instructional practice is shared and affirmed in a teacher survey conducted in 2005. In concert with the administrators interviewed in this study, teachers also cited more than one perception regarding the

integration of technology into instruction and how it is rightly defined in instructional practice, including computer technology is an effective tool for teaching, computers are effective in improvement overall achievement, and effective in raising scores on standardized tests. (eSchool News, 2005, as cited in Richardson, 2005).

It is concluded that school administrators have a shared belief that technology tools are powerful instructional allies, affirming the research of Gulek and Demirtas (2005) and Beaudry (2004). These researchers held that the use of technology in instruction impacts student achievement by enabling the student to easily transfer knowledge across content areas. This ability greatly enhances opportunities for differentiation and contributes to successful curriculum compacting. Administrative policymaking that moved to harness technology and maximize its power and potential in schools was further supported in by Maine's Learning Technology Initiative (MLTI). The research conducted by Muir, Knezek and Christiensen (2004) found that the mandated infusion of laptops into learning as dictated by MLTI will be useful in raising test scores and is worthy of further study.

There is shared perception among school administrators regarding the accessibility of technology in the classroom

as a means to facilitate teacher comfort level with integration methods. This conclusion is affirmed by Scrogan (1995) who suggested it is the limitation of available technology that prohibits the teacher's creative use of the tool. Piro (as cited in Cuban, 2001) further affirms the position, holding that without creative instructional methods, technology integration may not proceed further than offering students skills akin to those connected with the use of typewriters.

School administrators agree that funding must be strongly considered when seeking to integrate technology usage in schools. This conclusion has been supported in research and evidenced over time, held by Scrogan in 1995 and again by Cuban in 2001. Both researchers found that to insure the support of the taxpaying community, administrators must provide strong, objective evidence that technology is a critical component of effective instruction. The conclusion that school administrators are justly concerned with the financial impact of technology integration and how to adequately fund it is supported by Middleton (as cited in Sergiovanni, 2001). Middleton holds that school districts cannot count on the taxpayer continuing to provide money to schools for technology purposes without an increase in concrete evidence linking

tech infusion with student achievement. The current budgetary landscape administrators must travel is fraught with the pitfalls of spending growth limitation adjustments, cap waivers, and the ongoing dilemma of decreased ratable year after year in some communities. As such, it is easily held that the funding journey for technology integration remains perilous.

Cuban indicates that only after a sweeping reform of an array of education dynamics will technology's potential in education be fully realized, "The introduction of information technologies into schools has achieved neither the transformation of teaching and learning nor the productivity gains that a reform coalition of corporation executives, public officials, parents, academics and educators have sought. For such fundamental changes in teaching and learning to occur there would have to be widespread and deep reform into schools' organizational, political, social, and technological contexts" (Cuban, 2001, p. 195). The conclusion that school administrators share a negative perception of the role of cutting edge technology applications in education negates the construct at the core of Cuban's research and call for a sweeping reform of school organizations as the precursor toward realizing the impact of technology in our classrooms. This

conclusion further impedes the call to action posed in the research of Lessig (2005) "For the Internet has unleashed an extraordinary possibility for many to participate in the process of building and cultivating a culture that reaches far beyond local boundaries" (p. 9).

The conclusion that school administrators share a negative perception of new technologies and is a perception linked with apprehension and fear is further affirmed by Bellantoni (2006). A harsher reproach is evidenced in the work of Postman (1993) who critiqued technology and its seemingly uncontrollable growth within society, identifying it in harrowing terms as the force which may succeed in destroying vital sources of humanity. Postman devised the term "Technolpoly" to describe a dynamic in which technology flourishes at a rapid rate, vastly increasing the available supply of information to the populace. The critical consequence of such intense growth is that defenses against this abundance of information breaks down, leaving a culture with an inordinate reliance on technology for social direction and determinations regarding human purpose. In the 15-plus years since the publication of Postman's dire warnings, the ongoing explosion of information fostered by sweeping Internet accessibility on the global stage easily supports his prophecies and may be further linked to the

fear and apprehension school administrators associate with technology integration in schools. Thus, in regard to including cutting edge applications in the instructional environment, these perceptions presents formidable roadblocks in utilizing the power of the Internet, one that has already altered the global marketplace and promoted enormous change in established industries.

## Recommendations for Leadership, Management and Policy

In referencing the integration of technology into schools, and results thus far in evidence as culled from a review of research regarding the use of technology to transform teaching and learning, Cuban (2001) proposes a call to action for school leaders that references both dynamics and structures in education. In discussing leadership roles, Bolman and Deal (2003) suggest that administrators are leaders only to the extent that others grant them cooperation and follow their lead. The results of this study indicate that school leaders should anticipate change and be prepared to lay the structural mulch in which change can thrive, thereby creating an environment most conducive to promoting teacher involvement. This premise echoes Fullan and Hargreaves (1996) theory that every person is a change agent and that change is a combination of new

materials, behaviors, and practices that mix in a way designed to reap new beliefs and understandings.

With regard to management, school leaders seeking to harness the power of technology and use it to enhance student achievement must foster the synergy that comes from discussion and the sharing of ideas of key stakeholders. Leaders need to remain willing to view change as a welcome opportunity, despite the moments of uneasiness that are wont to occur during the Implementation Dip of the change process (Fullan, M., & Hargreaves , A., 1996). Within the context of this study, and in consideration of the limitations and delimitations identified herein, it may be suggested that relevant research findings gleaned from the responses of the subjects interviewed indicate the perceptions of school leaders may have a significant influence on technology integration into schools. Regarding facilities management, school leaders should remain mindful of the design implications of schools, both new and in reference to project renovations, and seek to apply state-of-the-art design trends that will support the evolving nature of classrooms with regard to continued advances in technology.

Achilles (1997) charges education leaders to follow the guideposts of researchers in education policy and reform, "...if those in charge of schools do not implement what

research has shown to work, education is destined to be little more than racing engines with slipping clutches" (p. 23). Further, the issue of problem analysis emerges as connective tissue to policy analysis, reinforcing the need to identify the problem with clarity and precision, insuring that any successive decisive action will lead to improved schooling. Thus, in regard to policy implications, it is recommended that school leaders seek to identify the policy actors involved in technology integration, beginning with an acknowledgment that their own perceptions are likely to provide influence in this area. School districts should also adopt a proactive approach, spurred by ongoing legislation in this area, and review district policies and procedures related to the use of new technologies in schools. Policy review should include Acceptable Use Policies (AUP), anti-harassment/cyber bullying, and student codes of conduct regarding technology use.

## Recommendations for Future Research

The following recommendations for future research in the area of technology integration into instruction are proposed and based on the findings and conclusions of the study:

1. The study should be replicated to obtain data and identify common themes, patterns, and exclusive themes in the perception of teachers with regard to technology

integration in instruction. One modification to the study is to have the researcher identify a larger subject population from a more diverse grouping of districts in other DFG categories.

2. The study should be conducted again to obtain data and identify common themes, patterns, and exclusive themes in the perception of students with regard to technology integration in instruction. One modification to the study is to have the researcher identify a larger subject population from a more diverse grouping of districts in other DFG categories.

3. The study should be conducted again to obtain data and identify common themes, patterns, and exclusive themes in the perception of parents with regard to technology integration in instruction. One modification to the study is to have the researcher identify a larger subject population from a more diverse grouping of districts in other DFG categories.

4. In recognizing the possibility that a level of apprehension exists among school administrators regarding technology integration, conduct a research study to identify effective methods districts may use to provide support and resources that will allay fears.

5. Conduct a research study to unearth data relating technology integration into instruction with student achievement in standards-based assessments.

6. Conduct a research study regarding the existence of policies that limit the use of new technologies in schools, thereby stunting teaching and learning (Ferdig, 2007).

In implementing recommendations 1-3, school leaders will be availed of additional qualitative data from three other key stakeholder groups in schools: teachers, students, and parents. Analysis of the data obtained will deepen the understanding of the perceptions of technology integration for these subject populations. Recommendation 4 may provide data that may aid in allaying fears and apprehensions associated with technology and related online risks in schools. Bellantoni (2006) affirms the conclusion that school administrators share a negative perception of new technologies and is a perception linked with apprehension and fear. Postman (1993) offers a stronger position in his criticisms of technology and its growing deification in society, naming it as a force with potential to destroy aspects of humanity.

Implementation of recommendation 5, to conduct a research study to unearth data relating technology integration into instruction with student achievement in

standards-based assessments, would add to the research base linking technology integration with student achievement. Obtained data and resultant analysis may bolster the position of school leaders in securing funding for technology integration and related tech-infused curriculum and instruction initiatives. Middleton (as cited in Sergiovanni, 2001) holds this as a critical recommendation when considering fiscal constraints on school budgetary measure.

Ferdig's (2007) research into new technologies and the growing crop of limitation placed on their use in schools (2007) supports recommendation 6, conduct a research study regarding the existence of policies that limit the use of new technologies in schools, thereby stunting teaching and learning. Research in this area may provide administrators with data and analysis that can be used to help frame the integration of new technologies in schools, especially in instructional areas that will move them beyond productivity tool status.

## Concluding Remarks

The gap between a student's at-home technology pursuits and the technology activity that same student is exposed to during the course of a school day is widening. In a recent study conducted by the Pew Internet and American Life

Project (as cited in Miners & Pascopella, 2007), students are spending 27 hours each week online at home, compared to an average 15 minutes per week at school. It is startling that students are being instructed in a school environment that is increasingly disparate from their real world environment, one in which the use of the Internet and other information and communication technologies (ICTs) has become part-and-parcel of everyday life.

The hope that technology integration will reach the "tipping point"--the point where the exception becomes the rule and a new technology becomes commonplace--remains elusive. Administrators charged with making decisions to positively impact teaching and learning maintain a resistance to incorporating technology and fostering new literacies, "Indeed, many seem to be resisted overtly by deliberate educational policies or covertly by educators who are not nearly as literate as the students they teach" (Leu, as cited in Miners & Pascopella, 2007). If we are to succeed in granting students direct access to the Internet, they must be equipped to discern what has become amazingly accessible through global connectivity; without an increase in technology integration, this objective becomes impossible for our students to attain.

The paradigm that emerges when considering the evolving nature of new technologies is one that continually adjusts, indicating that technology remains a catalyst for change in the learning environment. In the end, the charge rests with school administrators and policymakers, those responsible for decision-making that exhibits foresight and skill in viewing evolutionary change with clarity. The ability to put fear and apprehension aside is demanded by the deictic nature of emerging technologies and new literacies, and the nation's students deserve instructional leaders with the capacity to do so.

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# Appendix A

The following table lists the DFG classification for each school district in New Jersey based on the 2000 Decennial Census and includes the 1990 DFG. (New Jersey Department of Education 2000)

| County Code | County | District Code | District | 2000 DFG | 1990 DFG |
|---|---|---|---|---|---|
| 1 | Atlantic | 10 | Absecon City | CD | DE |
| 1 | Atlantic | 110 | Atlantic City | A | A |
| 1 | Atlantic | 120 | Atlantic Co Vocational | | |
| 1 | Atlantic | 125 | Atlantic Co Special Serv | | |
| 1 | Atlantic | 570 | Brigantine City | CD | DE |
| 1 | Atlantic | 590 | Buena Regional | A | A |
| 1 | Atlantic | 960 | Corbin City | | CD |
| 1 | Atlantic | 1300 | Egg Harbor City | A | B |
| 1 | Atlantic | 1310 | Egg Harbor Twp | CD | CD |
| 1 | Atlantic | 1410 | Estell Manor City | DE | DE |
| 1 | Atlantic | 1540 | Folsom Boro | CD | CD |
| 1 | Atlantic | 1690 | Galloway Twp | CD | DE |
| 1 | Atlantic | 1790 | Greater Egg Harbor Reg | CD | CD |
| 1 | Atlantic | 1940 | Hamilton Twp | CD | DE |
| 1 | Atlantic | 1960 | Hammonton Town | B | B |
| 1 | Atlantic | 2680 | Linwood City | GH | GH |
| 1 | Atlantic | 2780 | Longport | | DE |
| 1 | Atlantic | 2910 | Mainland Regional | DE | FG |
| 1 | Atlantic | 3020 | Margate City | DE | FG |
| 1 | Atlantic | 3480 | Mullica Twp | B | B |
| 1 | Atlantic | 3720 | Northfield City | DE | FG |
| 1 | Atlantic | 4180 | Pleasantville City | A | A |
| 1 | Atlantic | 4240 | Port Republic City | FG | FG |
| 1 | Atlantic | 4800 | Somers Point City | CD | CD |
| 1 | Atlantic | 5350 | Ventnor City | B | CD |
| 1 | Atlantic | 5760 | Weymouth Twp | B | CD |
| 3 | Bergen | 40 | Allendale Boro | I | I |
| 3 | Bergen | 80 | Alpine Boro | I | J |
| 3 | Bergen | 285 | Bergen Co Special Service | | |
| 3 | Bergen | 290 | Bergen County Vocational | | |
| 3 | Bergen | 300 | Bergenfield Boro | FG | DE |
| 3 | Bergen | 440 | Bogota Boro | DE | DE |
| 3 | Bergen | 740 | Carlstadt Boro | DE | DE |
| 3 | Bergen | 745 | Carlstadt-East Rutherford | CD | CD |
| 3 | Bergen | 890 | Cliffside Park Boro | B | CD |
| 3 | Bergen | 930 | Closter Boro | I | I |

| | | | | | |
|---|---|---|---|---|---|
| 3 | Bergen | 990 | Cresskill Boro | I | I |
| 3 | Bergen | 1070 | Demarest Boro | I | I |
| 3 | Bergen | 1130 | Dumont Boro | FG | DE |
| 3 | Bergen | 1230 | East Rutherford Boro | CD | CD |
| 3 | Bergen | 1270 | Edgewater Boro | GH | FG |
| 3 | Bergen | 1345 | Elmwood Park | CD | CD |
| 3 | Bergen | 1360 | Emerson Boro | GH | GH |
| 3 | Bergen | 1370 | Englewood City | DE | DE |
| 3 | Bergen | 1380 | Englewood Cliffs Boro | I | I |
| 3 | Bergen | 1450 | Fair Lawn Boro | GH | FG |
| 3 | Bergen | 1470 | Fairview Boro | A | B |
| 3 | Bergen | 1550 | Fort Lee Boro | FG | FG |
| 3 | Bergen | 1580 | Franklin Lakes Boro | I | J |
| 3 | Bergen | 1700 | Garfield City | B | B |
| 3 | Bergen | 1760 | Glen Rock Boro | J | I |
| 3 | Bergen | 1860 | Hackensack City | CD | CD |
| 3 | Bergen | 2050 | Harrington Park Boro | I | I |
| 3 | Bergen | 2080 | Hasbrouck Heights Boro | FG | DE |
| 3 | Bergen | 2090 | Haworth Boro | I | I |
| 3 | Bergen | 2180 | Hillsdale Boro | GH | GH |
| 3 | Bergen | 2200 | Ho Ho Kus Boro | J | J |
| 3 | Bergen | 2620 | Leonia Boro | GH | I |
| 3 | Bergen | 2710 | Little Ferry Boro | CD | DE |
| 3 | Bergen | 2740 | Lodi Borough | B | B |
| 3 | Bergen | 2860 | Lyndhurst Twp | DE | CD |
| 3 | Bergen | 2900 | Mahwah Twp | I | I |
| 3 | Bergen | 3060 | Maywood Boro | FG | FG |
| 3 | Bergen | 3170 | Midland Park Boro | GH | FG |
| 3 | Bergen | 3330 | Montvale Boro | I | I |
| 3 | Bergen | 3350 | Moonachie Boro | B | CD |
| 3 | Bergen | 3550 | New Milford Boro | FG | FG |
| 3 | Bergen | 3600 | North Arlington Boro | DE | DE |
| 3 | Bergen | 3700 | Northern Highlands Reg | J | I |
| 3 | Bergen | 3710 | Northern Valley Regional | I | I |
| 3 | Bergen | 3730 | Northvale Boro | FG | GH |
| 3 | Bergen | 3740 | Norwood Boro | I | I |
| 3 | Bergen | 3760 | Oakland Boro | I | I |
| 3 | Bergen | 3850 | Old Tappan Boro | I | I |
| 3 | Bergen | 3870 | Oradell Boro | I | I |
| 3 | Bergen | 3910 | Palisades Park | CD | CD |
| 3 | Bergen | 3930 | Paramus Boro | GH | GH |
| 3 | Bergen | 3940 | Park Ridge Boro | I | I |
| 3 | Bergen | 3960 | Pascack Valley Regional | I | I |
| 3 | Bergen | 4300 | Ramapo-Indian Hill Reg | I | I |
| 3 | Bergen | 4310 | Ramsey Boro | I | I |
| 3 | Bergen | 4370 | Ridgefield Boro | DE | DE |
| 3 | Bergen | 4380 | Ridgefield Park Twp | DE | DE |
| 3 | Bergen | 4390 | Ridgewood Village | J | I |

| | | | | | |
|---|---|---|---|---|---|
| 3 | Bergen | 4405 | River Dell Regional | I | I |
| 3 | Bergen | 4410 | River Edge Boro | I | GH |
| 3 | Bergen | 4430 | River Vale Twp | I | I |
| 3 | Bergen | 4470 | Rochelle Park Twp | FG | DE |
| 3 | Bergen | 4500 | Rockleigh | | |
| 3 | Bergen | 4600 | Rutherford Boro | GH | FG |
| 3 | Bergen | 4610 | Saddle Brook Twp | DE | DE |
| 3 | Bergen | 4620 | Saddle River Boro | J | J |
| 3 | Bergen | 4845 | South Bergen Jointure Com | | |
| 3 | Bergen | 4870 | South Hackensack Twp | CD | B |
| 3 | Bergen | 5150 | Teaneck Twp | GH | GH |
| 3 | Bergen | 5160 | Tenafly Boro | I | I |
| 3 | Bergen | 5170 | Teterboro | | |
| 3 | Bergen | 5330 | Upper Saddle River Boro | J | J |
| 3 | Bergen | 5410 | Waldwick Boro | GH | GH |
| 3 | Bergen | 5430 | Wallington Boro | B | B |
| 3 | Bergen | 5755 | Westwood Regional | GH | GH |
| 3 | Bergen | 5830 | Wood Ridge Boro | FG | FG |
| 3 | Bergen | 5880 | Woodcliff Lake Boro | J | J |
| 3 | Bergen | 5920 | Wyckoff Twp | I | I |
| 5 | Burlington | 200 | Bass River Twp | CD | B |
| 5 | Burlington | 380 | Beverly City | B | B |
| 5 | Burlington | 475 | Bordentown Regional | FG | DE |
| 5 | Burlington | 600 | Burlington City | B | B |
| 5 | Burlington | 605 | Burlington Co Spec Serv | | |
| 5 | Burlington | 610 | Burlington Co Vocational | | |
| 5 | Burlington | 620 | Burlington Twp | FG | DE |
| 5 | Burlington | 830 | Chesterfield Twp | GH | FG |
| 5 | Burlington | 840 | Cinnaminson Twp | FG | GH |
| 5 | Burlington | 1030 | Delanco Twp | CD | DE |
| 5 | Burlington | 1060 | Delran Twp | FG | FG |
| 5 | Burlington | 1250 | Eastampton Twp | FG | FG |
| 5 | Burlington | 1280 | Edgewater Park Twp | DE | FG |
| 5 | Burlington | 1420 | Evesham Twp | I | I |
| 5 | Burlington | 1520 | Florence Twp | DE | CD |
| 5 | Burlington | 1910 | Hainesport Twp | FG | DE |
| 5 | Burlington | 2610 | Lenape Regional | GH | GH |
| 5 | Burlington | 2850 | Lumberton Twp | FG | FG |
| 5 | Burlington | 2960 | Mansfield Twp | DE | FG |
| 5 | Burlington | 3010 | Maple Shade Twp | CD | CD |
| 5 | Burlington | 3070 | Medford Lakes Boro | I | I |
| 5 | Burlington | 3080 | Medford Twp | I | I |
| 5 | Burlington | 3360 | Moorestown Twp | I | I |
| 5 | Burlington | 3430 | Mount Holly Twp | B | B |
| 5 | Burlington | 3440 | Mount Laurel Twp | I | I |
| 5 | Burlington | 3540 | New Hanover Twp | B | CD |
| 5 | Burlington | 3650 | North Hanover Twp | CD | DE |
| 5 | Burlington | 3690 | Northern Burlington Reg | DE | DE |

| | | | | | |
|---|---|---|---|---|---|
| 5 | Burlington | 3920 | Palmyra Boro | DE | DE |
| 5 | Burlington | 4040 | Pemberton Borough | CD | CD |
| 5 | Burlington | 4050 | Pemberton Twp | B | CD |
| 5 | Burlington | 4320 | Rancocas Valley Regional | DE | DE |
| 5 | Burlington | 4450 | Riverside Twp | B | B |
| 5 | Burlington | 4460 | Riverton | GH | GH |
| 5 | Burlington | 4740 | Shamong Twp | GH | GH |
| 5 | Burlington | 4930 | Southampton Twp | DE | CD |
| 5 | Burlington | 5010 | Springfield Twp | FG | FG |
| 5 | Burlington | 5130 | Tabernacle Twp | GH | GH |
| 5 | Burlington | 5490 | Washington Twp | A | B |
| 5 | Burlington | 5720 | Westampton | GH | GH |
| 5 | Burlington | 5805 | Willingboro Twp | DE | DE |
| 5 | Burlington | 5890 | Woodland Twp | DE | B |
| 7 | Camden | 150 | Audubon Boro | DE | DE |
| 7 | Camden | 160 | Audubon Park Boro | | A |
| 7 | Camden | 190 | Barrington Boro | FG | DE |
| 7 | Camden | 260 | Bellmawr Boro | B | B |
| 7 | Camden | 330 | Berlin Boro | DE | DE |
| 7 | Camden | 340 | Berlin Twp | CD | CD |
| 7 | Camden | 390 | Black Horse Pike Regional | DE | DE |
| 7 | Camden | 580 | Brooklawn Boro | B | B |
| 7 | Camden | 680 | Camden City | A | A |
| 7 | Camden | 695 | Camden Co Ed Serv Comm | | |
| 7 | Camden | 700 | Camden County Vocational | | |
| 7 | Camden | 800 | Cherry Hill Twp | GH | I |
| 7 | Camden | 810 | Chesilhurst | A | A |
| 7 | Camden | 880 | Clementon Boro | B | B |
| 7 | Camden | 940 | Collingswood Boro | FG | DE |
| 7 | Camden | 1255 | Eastern Camden County Reg | GH | GH |
| 7 | Camden | 1720 | Gibbsboro Boro | FG | FG |
| 7 | Camden | 1770 | Gloucester City | B | B |
| 7 | Camden | 1780 | Gloucester Twp | DE | DE |
| 7 | Camden | 1880 | Haddon Heights Boro | GH | GH |
| 7 | Camden | 1890 | Haddon Twp | FG | FG |
| 7 | Camden | 1900 | Haddonfield Boro | J | I |
| 7 | Camden | 2130 | Hi Nella | | B |
| 7 | Camden | 2540 | Laurel Springs Boro | DE | CD |
| 7 | Camden | 2560 | Lawnside Boro | B | B |
| 7 | Camden | 2670 | Lindenwold Boro | B | CD |
| 7 | Camden | 2890 | Magnolia Boro | CD | B |
| 7 | Camden | 3110 | Merchantville Boro | DE | DE |
| 7 | Camden | 3420 | Mount Ephraim Boro | CD | CD |
| 7 | Camden | 3770 | Oaklyn Boro | CD | DE |
| 7 | Camden | 4060 | Pennsauken Twp | CD | CD |
| 7 | Camden | 4110 | Pine Hill Boro | B | B |
| 7 | Camden | 4120 | Pine Valley | | |
| 7 | Camden | 4590 | Runnemede Boro | B | B |

| | | | | | |
|---|---|---|---|---|---|
| 7 | Camden | 4790 | Somerdale Boro | CD | CD |
| 7 | Camden | 5035 | Sterling High School Dist | DE | CD |
| 7 | Camden | 5080 | Stratford Boro | DE | DE |
| 7 | Camden | 5140 | Tavistock | | |
| 7 | Camden | 5400 | Voorhees Twp | I | I |
| 7 | Camden | 5560 | Waterford Twp | DE | DE |
| 7 | Camden | 5820 | Winslow Twp | CD | CD |
| 7 | Camden | 5900 | Woodlynne Boro | B | B |
| 9 | Cape May | 170 | Avalon Boro | FG | FG |
| 9 | Cape May | 710 | Cape May City | CD | DE |
| 9 | Cape May | 715 | Cape May Co Special Serv | | |
| 9 | Cape May | 720 | Cape May Co Vocational | | |
| 9 | Cape May | 730 | Cape May Point | | DE |
| 9 | Cape May | 1080 | Dennis Twp | CD | DE |
| 9 | Cape May | 2820 | Lower Cape May Regional | B | B |
| 9 | Cape May | 2840 | Lower Twp | B | B |
| 9 | Cape May | 3130 | Middle Twp | B | B |
| 9 | Cape May | 3680 | North Wildwood City | A | A |
| 9 | Cape May | 3780 | Ocean City | DE | DE |
| 9 | Cape May | 4700 | Sea Isle City | B | CD |
| 9 | Cape May | 5060 | Stone Harbor Boro | FG | GH |
| 9 | Cape May | 5340 | Upper Twp | FG | FG |
| 9 | Cape May | 5610 | West Cape May Boro | DE | CD |
| 9 | Cape May | 5700 | West Wildwood | | A |
| 9 | Cape May | 5790 | Wildwood City | A | A |
| 9 | Cape May | 5800 | Wildwood Crest Boro | B | B |
| 9 | Cape May | 5840 | Woodbine Boro | A | A |
| 11 | Cumberland | 540 | Bridgeton City | A | A |
| 11 | Cumberland | 950 | Commercial Twp | A | A |
| 11 | Cumberland | 995 | Cumberland Co Vocational | | |
| 11 | Cumberland | 997 | Cumberland Regional | B | B |
| 11 | Cumberland | 1020 | Deerfield Twp | B | B |
| 11 | Cumberland | 1120 | Downe Twp | A | A |
| 11 | Cumberland | 1460 | Fairfield Twp | A | A |
| 11 | Cumberland | 1820 | Greenwich Twp | CD | CD |
| 11 | Cumberland | 2270 | Hopewell Twp | CD | CD |
| 11 | Cumberland | 2570 | Lawrence Twp | A | A |
| 11 | Cumberland | 3050 | Maurice River Twp | B | B |
| 11 | Cumberland | 3230 | Millville City | A | B |
| 11 | Cumberland | 4750 | Shiloh Boro | B | B |
| 11 | Cumberland | 5070 | Stow Creek Twp | CD | DE |
| 11 | Cumberland | 5300 | Upper Deerfield Twp | B | B |
| 11 | Cumberland | 5390 | Vineland City | A | B |
| 13 | Essex | 250 | Belleville Town | CD | CD |
| 13 | Essex | 410 | Bloomfield Twp | DE | DE |
| 13 | Essex | 660 | Caldwell-West Caldwell | I | I |
| 13 | Essex | 760 | Cedar Grove Twp | I | GH |
| 13 | Essex | 1210 | East Orange | A | A |

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| 13 | Essex | 1387 | Essex Co Ed Serv Comm | | |
| 13 | Essex | 1390 | Essex Co Voc-Tech | | |
| 13 | Essex | 1400 | Essex Fells Boro | J | J |
| 13 | Essex | 1465 | Fairfield Twp | GH | GH |
| 13 | Essex | 1750 | Glen Ridge Boro | I | I |
| 13 | Essex | 2330 | Irvington Township | A | A |
| 13 | Essex | 2730 | Livingston Twp | I | I |
| 13 | Essex | 3190 | Millburn Twp | J | J |
| 13 | Essex | 3310 | Montclair Town | I | GH |
| 13 | Essex | 3570 | Newark City | A | A |
| 13 | Essex | 3630 | North Caldwell Boro | J | J |
| 13 | Essex | 3750 | Nutley Town | FG | DE |
| 13 | Essex | 3880 | City Of Orange Twp | A | A |
| 13 | Essex | 4530 | Roseland Boro | I | I |
| 13 | Essex | 4900 | South Orange-Maplewood | I | I |
| 13 | Essex | 5370 | Verona Boro | I | I |
| 13 | Essex | 5630 | West Essex Regional | I | I |
| 13 | Essex | 5680 | West Orange Town | GH | GH |
| 15 | Gloucester | 860 | Clayton Boro | CD | B |
| 15 | Gloucester | 870 | Clearview Regional | FG | FG |
| 15 | Gloucester | 1100 | Deptford Twp | CD | CD |
| 15 | Gloucester | 1180 | East Greenwich Twp | FG | FG |
| 15 | Gloucester | 1330 | Elk Twp | B | B |
| 15 | Gloucester | 1590 | Franklin Twp | CD | CD |
| 15 | Gloucester | 1715 | Gateway Regional | CD | CD |
| 15 | Gloucester | 1730 | Glassboro | B | B |
| 15 | Gloucester | 1774 | Gloucester Co Spec Serv | | |
| 15 | Gloucester | 1775 | Gloucester Co Vocational | | |
| 15 | Gloucester | 1830 | Greenwich Twp | DE | DE |
| 15 | Gloucester | 2070 | Harrison Twp | GH | FG |
| 15 | Gloucester | 2440 | Kingsway Regional | FG | DE |
| 15 | Gloucester | 2750 | Logan Twp | FG | FG |
| 15 | Gloucester | 2990 | Mantua Twp | FG | DE |
| 15 | Gloucester | 3280 | Monroe Twp | CD | CD |
| 15 | Gloucester | 3490 | National Park Boro | B | B |
| 15 | Gloucester | 3580 | Newfield Boro | | CD |
| 15 | Gloucester | 4020 | Paulsboro Boro | A | A |
| 15 | Gloucester | 4140 | Pitman Boro | FG | DE |
| 15 | Gloucester | 4880 | South Harrison Twp | FG | DE |
| 15 | Gloucester | 4940 | Delsea Regional H.S Dist. | CD | CD |
| 15 | Gloucester | 5120 | Swedesboro-Woolwich | DE | B |
| 15 | Gloucester | 5500 | Washington Twp | FG | GH |
| 15 | Gloucester | 5590 | Wenonah Boro | I | I |
| 15 | Gloucester | 5620 | West Deptford Twp | DE | DE |
| 15 | Gloucester | 5740 | Westville Boro | B | B |
| 15 | Gloucester | 5860 | Woodbury City | B | B |
| 15 | Gloucester | 5870 | Woodbury Heights Boro | FG | FG |
| 17 | Hudson | 220 | Bayonne City | CD | B |

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| 17 | Hudson | 1200 | East Newark Boro | A | A |
| 17 | Hudson | 1850 | Guttenberg Town | B | B |
| 17 | Hudson | 2060 | Harrison Town | B | A |
| 17 | Hudson | 2210 | Hoboken City | FG | B |
| 17 | Hudson | 2295 | Hudson County Vocational | | |
| 17 | Hudson | 2390 | Jersey City | B | A |
| 17 | Hudson | 2410 | Kearny Town | B | B |
| 17 | Hudson | 3610 | North Bergen Twp | B | B |
| 17 | Hudson | 4730 | Secaucus Town | DE | FG |
| 17 | Hudson | 5240 | Union City | A | A |
| 17 | Hudson | 5580 | Weehawken Twp | CD | B |
| 17 | Hudson | 5670 | West New York Town | A | A |
| 19 | Hunterdon | 20 | Alexandria Twp | GH | GH |
| 19 | Hunterdon | 370 | Bethlehem Twp | I | I |
| 19 | Hunterdon | 430 | Bloomsbury Boro | GH | DE |
| 19 | Hunterdon | 670 | Califon Boro | I | I |
| 19 | Hunterdon | 910 | Clinton Town | I | I |
| 19 | Hunterdon | 920 | Clinton Twp | I | I |
| 19 | Hunterdon | 1040 | Delaware Twp | GH | GH |
| 19 | Hunterdon | 1050 | Delaware Valley Regional | GH | FG |
| 19 | Hunterdon | 1160 | East Amwell Twp | I | I |
| 19 | Hunterdon | 1510 | Flemington-Raritan Reg | I | GH |
| 19 | Hunterdon | 1600 | Franklin Twp | I | GH |
| 19 | Hunterdon | 1680 | Frenchtown Boro | FG | DE |
| 19 | Hunterdon | 1740 | Glen Gardner Boro | | GH |
| 19 | Hunterdon | 1970 | Hampton Boro | DE | DE |
| 19 | Hunterdon | 2140 | High Bridge Boro | GH | GH |
| 19 | Hunterdon | 2220 | Holland Twp | FG | FG |
| 19 | Hunterdon | 2300 | Hunterdon Central Reg | I | I |
| 19 | Hunterdon | 2305 | Hunterdon Co Ed Ser Comm | | |
| 19 | Hunterdon | 2308 | Hunterdon Co Vocational | | |
| 19 | Hunterdon | 2450 | Kingwood Twp | FG | FG |
| 19 | Hunterdon | 2530 | Lambertville City | GH | FG |
| 19 | Hunterdon | 2590 | Lebanon Boro | I | GH |
| 19 | Hunterdon | 2600 | Lebanon Twp | I | GH |
| 19 | Hunterdon | 3180 | Milford Boro | FG | DE |
| 19 | Hunterdon | 3660 | N Hunt/Voorhees Regional | I | I |
| 19 | Hunterdon | 4350 | Readington Twp | I | I |
| 19 | Hunterdon | 4890 | South Hunterdon Regional | GH | FG |
| 19 | Hunterdon | 5050 | Stockton Boro | FG | FG |
| 19 | Hunterdon | 5180 | Tewksbury Twp | J | J |
| 19 | Hunterdon | 5270 | Union Twp | GH | GH |
| 19 | Hunterdon | 5600 | West Amwell Twp | GH | FG |
| 21 | Mercer | 1245 | East Windsor Regional | GH | GH |
| 21 | Mercer | 1430 | Ewing Twp | DE | FG |
| 21 | Mercer | 1950 | Hamilton Twp | FG | FG |
| 21 | Mercer | 2280 | Hopewell Valley Regional | I | I |
| 21 | Mercer | 2580 | Lawrence Twp | GH | I |

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| 21 | Mercer | 3103 | Mercer Co Special Service | | |
| 21 | Mercer | 3105 | Mercer County Vocational | | |
| 21 | Mercer | 4255 | Princeton Regional | I | I |
| 21 | Mercer | 5210 | Trenton City | A | A |
| 21 | Mercer | 5510 | Washington Twp | I | GH |
| 21 | Mercer | 5715 | W Windsor-Plainsboro Reg | J | I |
| 23 | Middlesex | 750 | Carteret Boro | B | B |
| 23 | Middlesex | 970 | Cranbury Twp | J | I |
| 23 | Middlesex | 1140 | Dunellen Boro | FG | DE |
| 23 | Middlesex | 1170 | East Brunswick Twp | I | I |
| 23 | Middlesex | 1290 | Edison Twp | GH | FG |
| 23 | Middlesex | 2110 | Helmetta Boro | | DE |
| 23 | Middlesex | 2150 | Highland Park Boro | GH | GH |
| 23 | Middlesex | 2370 | Jamesburg Boro | DE | DE |
| 23 | Middlesex | 3120 | Metuchen Boro | I | GH |
| 23 | Middlesex | 3140 | Middlesex Boro | FG | FG |
| 23 | Middlesex | 3145 | Middlesex Co Ed Ser Comm | | |
| 23 | Middlesex | 3150 | Middlesex Co Vocational | | |
| 23 | Middlesex | 3220 | Milltown Boro | FG | FG |
| 23 | Middlesex | 3290 | Monroe Twp | FG | FG |
| 23 | Middlesex | 3530 | New Brunswick City | A | A |
| 23 | Middlesex | 3620 | North Brunswick Twp | FG | GH |
| 23 | Middlesex | 3845 | Old Bridge Twp | FG | FG |
| 23 | Middlesex | 4090 | Perth Amboy City | A | A |
| 23 | Middlesex | 4130 | Piscataway Twp | GH | FG |
| 23 | Middlesex | 4660 | Sayreville Boro | DE | DE |
| 23 | Middlesex | 4830 | South Amboy City | CD | CD |
| 23 | Middlesex | 4860 | South Brunswick Twp | I | I |
| 23 | Middlesex | 4910 | South Plainfield Boro | FG | FG |
| 23 | Middlesex | 4920 | South River Boro | CD | B |
| 23 | Middlesex | 4970 | Spotswood Boro | DE | CD |
| 23 | Middlesex | 5850 | Woodbridge Twp | DE | DE |
| 25 | Monmouth | 50 | Allenhurst | | |
| 25 | Monmouth | 100 | Asbury Park City | A | A |
| 25 | Monmouth | 130 | Atlantic Highlands Boro | GH | FG |
| 25 | Monmouth | 180 | Avon Boro | I | GH |
| 25 | Monmouth | 225 | Bayshore Jointure Comm | | |
| 25 | Monmouth | 270 | Belmar Boro | DE | DE |
| 25 | Monmouth | 500 | Bradley Beach Boro | CD | B |
| 25 | Monmouth | 560 | Brielle Boro | GH | GH |
| 25 | Monmouth | 945 | Colts Neck Twp | I | I |
| 25 | Monmouth | 1000 | Deal Boro | | GH |
| 25 | Monmouth | 1260 | Eatontown Boro | FG | FG |
| 25 | Monmouth | 1440 | Fair Haven Boro | I | I |
| 25 | Monmouth | 1490 | Farmingdale Boro | DE | DE |
| 25 | Monmouth | 1640 | Freehold Boro | B | CD |
| 25 | Monmouth | 1650 | Freehold Regional | GH | GH |
| 25 | Monmouth | 1660 | Freehold Twp | GH | GH |

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| 25 | Monmouth | 2105 | Hazlet Twp | DE | DE |
| 25 | Monmouth | 2120 | Henry Hudson Regional | DE | DE |
| 25 | Monmouth | 2160 | Highlands Boro | CD | CD |
| 25 | Monmouth | 2230 | Holmdel Twp | I | I |
| 25 | Monmouth | 2290 | Howell Twp | FG | FG |
| 25 | Monmouth | 2320 | Interlaken | | |
| 25 | Monmouth | 2400 | Keansburg Boro | A | A |
| 25 | Monmouth | 2430 | Keyport Boro | CD | CD |
| 25 | Monmouth | 2720 | Little Silver Boro | J | I |
| 25 | Monmouth | 2770 | Long Branch City | B | B |
| 25 | Monmouth | 2920 | Manalapan-Englishtown Reg | GH | GH |
| 25 | Monmouth | 2930 | Manasquan Boro | GH | FG |
| 25 | Monmouth | 3030 | Marlboro Twp | I | I |
| 25 | Monmouth | 3040 | Matawan-Aberdeen Regional | FG | FG |
| 25 | Monmouth | 3160 | Middletown Twp | GH | GH |
| 25 | Monmouth | 3200 | Millstone Twp | I | GH |
| 25 | Monmouth | 3250 | Monmouth Beach Boro | I | I |
| 25 | Monmouth | 3255 | Monmouth-Ocean Ed Ser Com | | |
| 25 | Monmouth | 3260 | Monmouth Co Vocational | | |
| 25 | Monmouth | 3270 | Monmouth Regional | GH | GH |
| 25 | Monmouth | 3500 | Neptune City | CD | CD |
| 25 | Monmouth | 3510 | Neptune Twp | CD | CD |
| 25 | Monmouth | 3810 | Ocean Twp | FG | GH |
| 25 | Monmouth | 3830 | Oceanport Boro | GH | GH |
| 25 | Monmouth | 4360 | Red Bank Boro | CD | CD |
| 25 | Monmouth | 4365 | Red Bank Regional | FG | FG |
| 25 | Monmouth | 4520 | Roosevelt Boro | GH | I |
| 25 | Monmouth | 4570 | Rumson Boro | J | I |
| 25 | Monmouth | 4580 | Rumson-Fair Haven Reg | J | I |
| 25 | Monmouth | 4680 | Sea Bright Boro | | GH |
| 25 | Monmouth | 4690 | Sea Girt Boro | I | I |
| 25 | Monmouth | 4760 | Shore Regional | GH | GH |
| 25 | Monmouth | 4770 | Shrewsbury Boro | I | I |
| 25 | Monmouth | 4840 | South Belmar | | CD |
| 25 | Monmouth | 4980 | Spring Lake Boro | I | I |
| 25 | Monmouth | 4990 | Spring Lake Heights Boro | FG | FG |
| 25 | Monmouth | 5185 | Tinton Falls | GH | GH |
| 25 | Monmouth | 5230 | Union Beach | CD | B |
| 25 | Monmouth | 5310 | Upper Freehold Regional | GH | FG |
| 25 | Monmouth | 5420 | Wall Twp | GH | FG |
| 25 | Monmouth | 5640 | West Long Branch Boro | FG | GH |
| 27 | Morris | 450 | Boonton Town | FG | FG |
| 27 | Morris | 460 | Boonton Twp | I | I |
| 27 | Morris | 630 | Butler Boro | DE | FG |
| 27 | Morris | 785 | Sch Dist Of The Chathams | J | I |
| 27 | Morris | 820 | Chester Twp | J | I |
| 27 | Morris | 1090 | Denville Twp | I | I |
| 27 | Morris | 1110 | Dover Town | A | B |

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| 27 | Morris | 1190 | East Hanover Twp | GH | GH |
| 27 | Morris | 1530 | Florham Park Boro | I | I |
| 27 | Morris | 1990 | Hanover Park Regional | GH | I |
| 27 | Morris | 2000 | Hanover Twp | I | GH |
| 27 | Morris | 2010 | Harding Township | J | J |
| 27 | Morris | 2380 | Jefferson Twp | GH | GH |
| 27 | Morris | 2460 | Kinnelon Boro | I | I |
| 27 | Morris | 2650 | Lincoln Park Boro | FG | GH |
| 27 | Morris | 2870 | Madison Boro | I | I |
| 27 | Morris | 3090 | Mendham Boro | J | I |
| 27 | Morris | 3100 | Mendham Twp | J | J |
| 27 | Morris | 3240 | Mine Hill Twp | FG | FG |
| 27 | Morris | 3340 | Montville Twp | I | I |
| 27 | Morris | 3364 | Educ Serv Comm Morris Co | | |
| 27 | Morris | 3365 | Morris County Vocational | | |
| 27 | Morris | 3370 | Morris Hills Regional | GH | GH |
| 27 | Morris | 3380 | Morris Plains Boro | I | I |
| 27 | Morris | 3385 | Morris School District | GH | GH |
| 27 | Morris | 3410 | Mount Arlington Boro | GH | FG |
| 27 | Morris | 3450 | Mount Olive Twp | GH | GH |
| 27 | Morris | 3460 | Mountain Lakes Boro | J | J |
| 27 | Morris | 3520 | Netcong Boro | DE | DE |
| 27 | Morris | 3950 | Parsippany-Troy Hills Twp | GH | GH |
| 27 | Morris | 4000 | Long Hill Twp | I | I |
| 27 | Morris | 4080 | Pequannock Twp | GH | GH |
| 27 | Morris | 4330 | Randolph Twp | I | I |
| 27 | Morris | 4440 | Riverdale Boro | FG | FG |
| 27 | Morris | 4480 | Rockaway Boro | FG | FG |
| 27 | Morris | 4490 | Rockaway Twp | I | I |
| 27 | Morris | 4560 | Roxbury Twp | GH | GH |
| 27 | Morris | 5380 | Victory Gardens | | B |
| 27 | Morris | 5520 | Washington Twp | I | I |
| 27 | Morris | 5660 | West Morris Regional | I | I |
| 27 | Morris | 5770 | Wharton Boro | DE | FG |
| 29 | Ocean | 185 | Barnegat Twp | CD | CD |
| 29 | Ocean | 210 | Bay Head Boro | I | I |
| 29 | Ocean | 230 | Beach Haven Boro | FG | DE |
| 29 | Ocean | 320 | Berkeley Twp | B | B |
| 29 | Ocean | 530 | Brick Twp | DE | DE |
| 29 | Ocean | 770 | Central Regional | B | B |
| 29 | Ocean | 1150 | Eagleswood Twp | B | B |
| 29 | Ocean | 2350 | Island Heights Boro | GH | FG |
| 29 | Ocean | 2360 | Jackson Twp | DE | DE |
| 29 | Ocean | 2480 | Lacey Twp | DE | CD |
| 29 | Ocean | 2500 | Lakehurst Boro | B | B |
| 29 | Ocean | 2520 | Lakewood Twp | | B |
| 29 | Ocean | 2550 | Lavallette Boro | DE | DE |
| 29 | Ocean | 2690 | Little Egg Harbor Twp | B | B |

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| 29 | Ocean | 2760 | Long Beach Island | FG | FG |
| 29 | Ocean | 2940 | Manchester Twp | B | B |
| 29 | Ocean | 2980 | Mantoloking | | I |
| 29 | Ocean | 3790 | Ocean County Vocational | | |
| 29 | Ocean | 3800 | Ocean Gate Boro | B | B |
| 29 | Ocean | 3820 | Ocean Twp | CD | B |
| 29 | Ocean | 4105 | Pinelands Regional | B | B |
| 29 | Ocean | 4190 | Plumsted Twp | DE | CD |
| 29 | Ocean | 4210 | Point Pleasant Boro | FG | DE |
| 29 | Ocean | 4220 | Point Pleasant Beach Boro | FG | DE |
| 29 | Ocean | 4710 | Seaside Heights Boro | A | A |
| 29 | Ocean | 4720 | Seaside Park Boro | DE | DE |
| 29 | Ocean | 4950 | Southern Regional | DE | CD |
| 29 | Ocean | 5020 | Stafford Twp | DE | B |
| 29 | Ocean | 5190 | Toms River Regional | DE | DE |
| 29 | Ocean | 5220 | Tuckerton Boro | CD | B |
| 31 | Passaic | 420 | Bloomingdale Boro | FG | FG |
| 31 | Passaic | 900 | Clifton City | CD | DE |
| 31 | Passaic | 1920 | Haledon Boro | B | B |
| 31 | Passaic | 2100 | Hawthorne Boro | DE | DE |
| 31 | Passaic | 2510 | Lakeland Regional | FG | FG |
| 31 | Passaic | 2700 | Little Falls Twp | FG | FG |
| 31 | Passaic | 3640 | North Haledon Boro | FG | DE |
| 31 | Passaic | 3970 | Passaic City | A | A |
| 31 | Passaic | 3975 | Passaic Co Ed Serv Comm | | |
| 31 | Passaic | 3980 | Passaic Co Manchester Reg | B | CD |
| 31 | Passaic | 3990 | Passaic Valley Regional | DE | DE |
| 31 | Passaic | 3995 | Passaic County Vocational | | |
| 31 | Passaic | 4010 | Paterson City | A | A |
| 31 | Passaic | 4230 | Pompton Lakes Boro | FG | FG |
| 31 | Passaic | 4270 | Prospect Park Boro | B | B |
| 31 | Passaic | 4400 | Ringwood Boro | GH | GH |
| 31 | Passaic | 5200 | Totowa Boro | CD | DE |
| 31 | Passaic | 5440 | Wanaque Boro | DE | CD |
| 31 | Passaic | 5570 | Wayne Twp | GH | GH |
| 31 | Passaic | 5650 | West Milford Twp | FG | FG |
| 31 | Passaic | 5690 | West Paterson Boro | DE | DE |
| 33 | Salem | 60 | Alloway Twp | DE | DE |
| 33 | Salem | 1340 | Elmer Boro | CD | CD |
| 33 | Salem | 1350 | Elsinboro Twp | DE | DE |
| 33 | Salem | 2800 | Lower Alloways Creek | CD | B |
| 33 | Salem | 2950 | Mannington Twp | CD | B |
| 33 | Salem | 3860 | Oldmans Twp | CD | CD |
| 33 | Salem | 4070 | Penns Grv-Carney'S Pt Reg | A | B |
| 33 | Salem | 4075 | Pennsville | CD | CD |
| 33 | Salem | 4150 | Pittsgrove Twp | CD | CD |
| 33 | Salem | 4280 | Quinton Twp | A | B |
| 33 | Salem | 4630 | Salem City | A | A |

| 33 | Salem | 4635 | Salem Co Special Service | | |
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| 33 | Salem | 4640 | Salem County Vocational | | |
| 33 | Salem | 5320 | Upper Pittsgrove Twp | CD | DE |
| 33 | Salem | 5910 | Woodstown-Pilesgrove Reg | FG | FG |
| 35 | Somerset | 240 | Bedminster Twp | I | J |
| 35 | Somerset | 350 | Bernards Twp | J | I |
| 35 | Somerset | 490 | Bound Brook Boro | B | CD |
| 35 | Somerset | 510 | Branchburg Twp | I | I |
| 35 | Somerset | 555 | Bridgewater-Raritan Reg | I | GH |
| 35 | Somerset | 1610 | Franklin Twp | GH | GH |
| 35 | Somerset | 1810 | Green Brook Twp | GH | GH |
| 35 | Somerset | 2170 | Hillsborough Twp | I | I |
| 35 | Somerset | 3000 | Manville Boro | CD | CD |
| 35 | Somerset | 3210 | Millstone | | FG |
| 35 | Somerset | 3320 | Montgomery Twp | J | J |
| 35 | Somerset | 3670 | North Plainfield Boro | DE | FG |
| 35 | Somerset | 4510 | Rocky Hill | | I |
| 35 | Somerset | 4805 | Somerset Co Ed Serv Comm | | |
| 35 | Somerset | 4810 | Somerset Co Vocational | | |
| 35 | Somerset | 4815 | Somerset Hills Regional | I | I |
| 35 | Somerset | 4820 | Somerville Boro | FG | DE |
| 35 | Somerset | 4850 | South Bound Brook | B | CD |
| 35 | Somerset | 5470 | Warren Twp | I | I |
| 35 | Somerset | 5540 | Watchung Boro | I | I |
| 35 | Somerset | 5550 | Watchung Hills Regional | I | I |
| 37 | Sussex | 90 | Andover Reg | FG | FG |
| 37 | Sussex | 520 | Branchville Boro | | DE |
| 37 | Sussex | 640 | Byram Twp | I | I |
| 37 | Sussex | 1560 | Frankford Twp | FG | FG |
| 37 | Sussex | 1570 | Franklin Boro | CD | CD |
| 37 | Sussex | 1630 | Fredon Twp | GH | GH |
| 37 | Sussex | 1800 | Green Twp | I | I |
| 37 | Sussex | 1930 | Hamburg Boro | DE | DE |
| 37 | Sussex | 1980 | Hampton Twp | GH | GH |
| 37 | Sussex | 2030 | Hardyston Twp | FG | FG |
| 37 | Sussex | 2165 | High Point Regional | DE | DE |
| 37 | Sussex | 2240 | Hopatcong | FG | FG |
| 37 | Sussex | 2465 | Kittatinny Regional | FG | FG |
| 37 | Sussex | 2490 | Lafayette Twp | GH | FG |
| 37 | Sussex | 2615 | Lenape Valley Regional | GH | GH |
| 37 | Sussex | 3300 | Montague Twp | B | DE |
| 37 | Sussex | 3590 | Newton Town | CD | CD |
| 37 | Sussex | 3840 | Ogdensburg Boro | FG | FG |
| 37 | Sussex | 4650 | Sandyston-Walpack Twp | FG | DE |
| 37 | Sussex | 4960 | Sparta Twp | I | I |
| 37 | Sussex | 5030 | Stanhope Boro | GH | GH |
| 37 | Sussex | 5040 | Stillwater Twp | FG | DE |
| 37 | Sussex | 5100 | Sussex-Wantage Regional | DE | CD |

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| 37 | Sussex | 5105 | Sussex Co Ed Serv Comm | | |
| 37 | Sussex | 5110 | Sussex County Vocational | | |
| 37 | Sussex | 5360 | Vernon Twp | FG | FG |
| 37 | Sussex | 5435 | Wallkill Valley Regional | DE | DE |
| 39 | Union | 310 | Berkeley Heights Twp | I | I |
| 39 | Union | 850 | Clark Twp | FG | FG |
| 39 | Union | 980 | Cranford Twp | I | GH |
| 39 | Union | 1320 | Elizabeth City | A | A |
| 39 | Union | 1710 | Garwood Boro | DE | CD |
| 39 | Union | 2190 | Hillside Twp | CD | CD |
| 39 | Union | 2420 | Kenilworth Boro | DE | CD |
| 39 | Union | 2660 | Linden City | B | B |
| 39 | Union | 3395 | Morris-Union Jointure Com | | |
| 39 | Union | 3470 | Mountainside Boro | I | I |
| 39 | Union | 3560 | New Providence Boro | I | I |
| 39 | Union | 4160 | Plainfield City | B | B |
| 39 | Union | 4290 | Rahway City | CD | CD |
| 39 | Union | 4540 | Roselle Boro | B | CD |
| 39 | Union | 4550 | Roselle Park Boro | DE | DE |
| 39 | Union | 4670 | Scotch Plains-Fanwood Reg | I | I |
| 39 | Union | 5000 | Springfield Twp | GH | GH |
| 39 | Union | 5090 | Summit City | I | I |
| 39 | Union | 5245 | Union Co Ed Serv Comm | | |
| 39 | Union | 5260 | Union County Vocational | | |
| 39 | Union | 5290 | Union Twp | DE | DE |
| 39 | Union | 5730 | Westfield Town | I | I |
| 39 | Union | 5810 | Winfield Twp | B | B |
| 41 | Warren | 30 | Allamuchy Twp | I | GH |
| 41 | Warren | 70 | Alpha Boro | B | CD |
| 41 | Warren | 280 | Belvidere Town | DE | DE |
| 41 | Warren | 400 | Blairstown Twp | FG | FG |
| 41 | Warren | 1620 | Franklin Twp | DE | DE |
| 41 | Warren | 1670 | Frelinghuysen Twp | GH | FG |
| 41 | Warren | 1785 | Great Meadows Regional | GH | FG |
| 41 | Warren | 1840 | Greenwich Twp | I | FG |
| 41 | Warren | 1870 | Hackettstown | DE | DE |
| 41 | Warren | 2020 | Hardwick Twp | | FG |
| 41 | Warren | 2040 | Harmony Twp | DE | DE |
| 41 | Warren | 2250 | Hope Twp | FG | FG |
| 41 | Warren | 2470 | Knowlton Twp | FG | DE |
| 41 | Warren | 2790 | Lopatcong Twp | DE | DE |
| 41 | Warren | 2970 | Mansfield Twp | FG | DE |
| 41 | Warren | 3675 | North Warren Regional | FG | FG |
| 41 | Warren | 3890 | Oxford Twp | DE | CD |
| 41 | Warren | 4100 | Phillipsburg Town | B | B |
| 41 | Warren | 4200 | Pohatcong Twp | DE | DE |
| 41 | Warren | 5450 | Warren Co Special Service | | |
| 41 | Warren | 5460 | Warren County Vocational | | |

| | | | | | |
|---|---|---|---|---|---|
| 41 | Warren | 5465 | Warren Hills Regional | FG | DE |
| 41 | Warren | 5480 | Washington Boro | DE | CD |
| 41 | Warren | 5530 | Washington Twp | GH | GH |
| 41 | Warren | 5780 | White Twp | DE | CD |